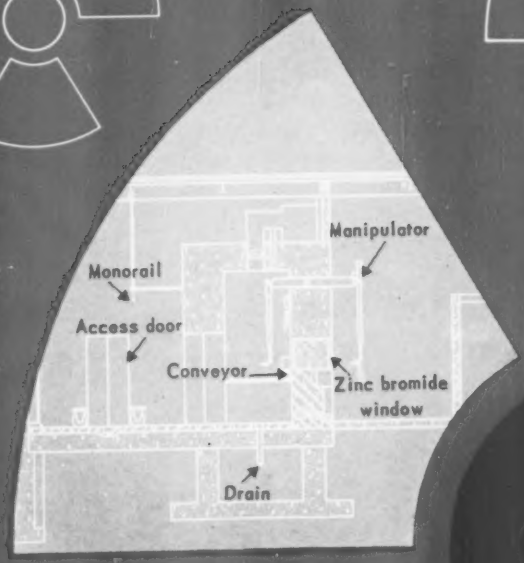
November 1954

NUCLEONICS

BUYERS' GUIDE ISSUE



DESIGN

EQUIPMENT

HOT LABS

A Special Report

OPERATION

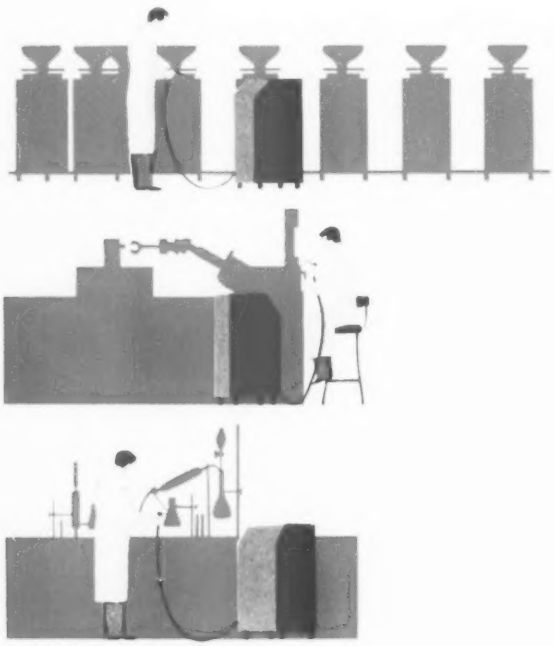
A McGRAW-HILL PUBLICATION ★ TWO DOLLARS

Sensitive to 1 part in 2,000,000

Consolidated's new Model 24-110 Leak Detector

For leak detection applications where the utmost in sensitivity is required, Consolidated's new Model 24-110 Leak Detector meets the most stringent requirements. The latest addition to the Consolidated leak detector line is a modification of a high precision instrument built by CEC for the Atomic Energy Commission. Operating on the mass spectrometer principle made famous by CEC's widely used Model 24-101A industrial leak detector, the sensitivity of the 24-110 has been multiplied by a factor of 10 through advanced electronic techniques. Its uses include testing of both evacuated and pressurized equipment, revealing the existence or the absence of leaks, finding the locations of leaks, and determining the rates of leakage. Outstanding features include: an audible alarm whose sound-pitch varies with the magnitude of the leak; an accessory sampling probe for rapid pressure-system leak testing; a selector switch that provides six ranges of sensitivity; a visual leak-rate meter capable of indicating the presence of 1 part helium in 2,000,000 parts air. Compact, self-contained and mobile, Consolidated's new Model 24-110 Leak Detector is a perfect tool for highly critical applications such as detection in ultra high vacuum laboratory equipment, leak-checking of TV color tubes, and safety control in nuclear material manufacturing.

Request Bulletin CEC 1838-X1



Consolidated Engineering CORPORATION
300 North Sierra Madre Villa, Pasadena 15, California

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NUCLEONICS

NOVEMBER • 1954

Vol. 12, No. 11

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Mechanical Master-Slave Manipulator; Electronically Controlled Manipulator; Heavy-Duty Hydraulic Manipulator

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Equipment for Processing Reactor Fuels; Hydraulically Operated Remote Pipetter; Hot-Lab Fiberglas Air Filters; Crane and Fork Lift for Remote Handling; Remote Metallographic Equipment—1, Remote Microscopy, 2, Sample Preparation; Handling Irradiated Fuel-Specimen Capsules; Low-Cost Plastic Sealer; Mobile Shield for Cyclotron Target Removal; Binocular Periscope Viewers

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GENERAL ELECTRIC

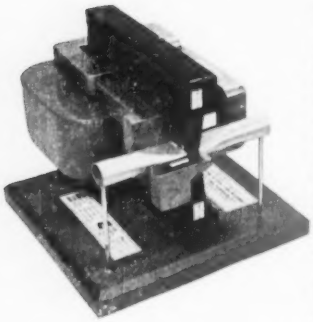
Atomic Power Equipment — Schenectady 6, N. Y.

COMPONENTS and SERVICES for ATOMIC POWER EQUIPMENT

The General Electric Atomic Power Equipment organization is equipped to engineer and market atomic power equipment and components for industrial use. Low-power research reactors and components, intended primarily for use by educational, research, medical and industrial organizations can be supplied. The components can be integrated into a system to form a complete reactor installation. Package Power reactors can be supplied in accordance with regulations of the Atomic Energy Commission.

COOLANT-SYSTEM PRIMARY COMPONENTS

A-c Electromagnetic Pump

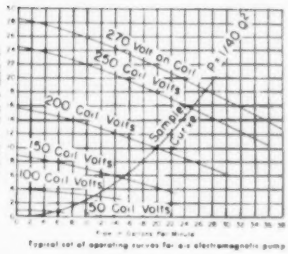


APPLICATION

The G-E a-c electromagnetic pump can be used to pump any conducting fluid that has a specific resistance equal to or less than stainless steel (about 90 microhm-cm) if the fluid will wet the stainless steel. Certain liquid metals such as sodium, sodium potassium alloys (Nak), and lithium fit this classification and can be pumped successfully at temperatures as high as 536 C (1000 F).

FEATURES

1. No moving parts.
2. High temperature operation.
3. Fluid can be hermetically sealed in a loop
4. Easy to install.
5. Operates from standard single-phase a-c voltages.



Typical set of operating curves for a-c electromagnetic pump

DESCRIPTION

The pump consists of three units:

1. Transformer unit
2. Cell unit
3. Capacitor unit

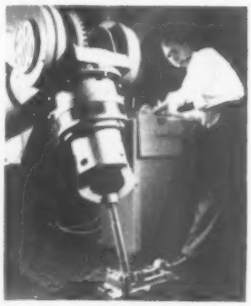
OPERATION

The pump operates on the principle that a current-carrying conductor in a magnetic field is acted on by a force. In this application, the fluid acts as the conductor and, thus, when current and flux are properly applied, pumping will occur.

OTHER COOLANT-SYSTEMS COMPONENTS

1. Electromagnetic pumps for sodium, as well as for molten metals (non-atomic application).
2. Special mechanical pumps for liquid metal and water in nuclear applications.
3. Special stop and check valves for reactor coolant systems.
4. Freeze seals which are special valves for such applications as gas vent lines. These seals consist of sodium plugs which are melted to open the seal and frozen when sealing action is desired.
5. Electromagnetic flowmeters for liquid metal and other special sensing devices for reactor systems.

REMOTE-HANDLING EQUIPMENT



"O-Man", the world's largest and strongest general-purpose manipulator in operation today was designed and developed by G.E. for nuclear applications. Operating from a crane bridge through a vertical range of 25 feet, "O-Man" can apply a force of 500 pounds in the least favorable position and can lift and manipulate loads up to 5,000 pounds. Design features include amplidyne control, elimination of slip rings and radiation resistant materials.

Other remote handling equipment under development at G.E. includes new advanced types specifically designed for small radiation laboratories and for reactor power plants. This equipment will be small, compact, economical, and easy to operate.

Other "Hot" Laboratory Equipment

Manipulators	Mechanical Processing Stations
Viewing Windows	Transfer Dollies & Casks
Optical Systems	Casks, Charging Devices, and Containers
Inspection Stations	Control Systems

Decontamination Equipment

COOLANT SYSTEM SERVICE COMPONENTS

These components are used to service and clean the primary coolant. Included in this category are:

1. Sodium cold traps to remove sodium oxide.
2. Sodium plugging indicators.
3. Dionizers for water coolants systems.
4. Pressurizers for water coolants systems.
5. Sodium disposal and decontamination facilities.

G-E EQUIPMENT FOR NUCLEAR RESEARCH AND APPLICATION

Want more information? Use post card insert in this issue.

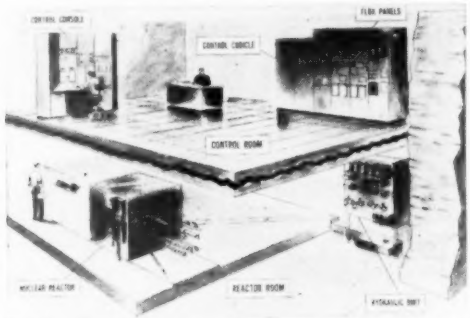
GENERAL ELECTRIC

Atomic Power Equipment — Schenectady 6, N. Y.

COMPONENTS and SERVICES for ATOMIC POWER EQUIPMENT

NUCLEAR REACTORS

Nuclear Test Reactors, Water Boiler Reactors, and Swimming Pool Reactors are new research tools for industry in on-the-job training and in materials research; for educational institutions in nuclear training and development; for research organizations in medical, pharmaceutical, agricultural, biological, chemical, and metallurgical research. General Electric is a single source for complete Nuclear Test, Water Boiler, and Swimming Pool reactors to organizations qualified by the AEC.



Possible arrangement of a Research Reactor System. In addition to all components, General Electric offers complete reactor engineering services to all organizations qualified by the Atomic Energy Commission

REACTOR CONTROL SYSTEMS and COMPONENTS

1. Reactor amplifiers such as:
   Preamplifiers, power level, period amplifiers
2. Reactor control and safety systems:
   Rod drives, control consoles, control rods

REACTOR SERVICE FACILITIES

Refueling, servicing, and maintenance facilities for reactors, together with the necessary accessories, casks, and fuel-element record systems; fuel handling and mechanical processing, and storage facilities for spent radioactive fuel elements and radioactive wastes.

Delivery & mfg. of this Atomic Power Eqpt. subject to all applicable laws and regulations of the AEC.

Tube Department — Schenectady 5, N. Y.

THERE'S A G-E ELECTRONIC TUBE FOR EVERY NUCLEAR APPLICATION

Electronic TUBES

By nature, nuclear instrumentation is electronic. Electronic devices must be employed in nuclear experiments involving particles that are too small and too fast to be recorded by human capabilities. Remote control by electronics is vital in many such experiments.

The average nuclear experiment begins only when the appropriate electronic equipment is assembled and functioning—the experimenter needs electronic tubes that will do a dependable and accurate job. Some of the well-known G-E tube types and their applications for nuclear experiments are listed below.

GL-5545
Inert-gas-filled
Thyratron

GL-6228
Ignitron

GL-8020
High-Vacuum
Rectifier

GL-6201
Five-Star Tube

TYPE	TYPICAL APPLICATION
THYRATRONS	Useful as a relay; faster, more sensitive than an electromagnetic relay. Used in a-c motor speed control, useful in reactor control-rod systems.
IGNITRONS	Used in synchrotron pulse current supplies, and in betatron orbit shift circuits.
GRID CONTROLLED HIGH-VACUUM TUBES	High-powered tubes used in large scale work. Examples: for cyclotron oscillators and FM cyclotrons.
CATHODE-RAY TUBES	Used as pulse height analyzers; auxiliary equipment gives cathode-ray tube display of numbers of pulses vs. their pulse height for photographic or visual operation. Fast experiments can only be recorded on cathode-ray tubes for accurate record at these speeds.
RECTIFIERS	Power supplies for other equipment or, in the case of high voltage models, for Geiger Counters or other detectors. Also used for magnet power supplies.
MICROWAVE DEVICES	Principally for linear accelerators, including high-power, high-frequency pulsed magnetrons and klystrons.
FIVE-STAR HIGH-RELIABILITY TUBES	Effect of single tube failure becomes greater as nucleonic equipment becomes more complex; designers turn to reliable types such as: G-E GL-5726 (*6AL5) in diode coupling stages of scalers; GL-6201 (*12AT7) in multivibrators for pulse generators and scalers; GL-6087 (*5Y3-GT) for power supplies; GL-6134 (*6AC7) for control tube voltage regulators or discriminators in scalers. (*Prototypes)

For additional information regarding any of the above tube types, or for special types for specific problems, write to: General Electric Co., Tube Dept., Schenectady 5, N.Y.

G-E EQUIPMENT FOR NUCLEAR RESEARCH AND APPLICATION

SCINTILLATION-TYPE ALPHA POPPY

The a-c alpha poppy is an alpha-particle detector using the scintillation principle; designed as a health monitoring device for inspecting clothes, laboratory areas, machines, and benches suspected of alpha contamination. Easily handled. Poppy will operate successfully with most scalers and rate meters. Often used with devices which give an audible "popping" signal.

FEATURES

- Large sensitive area (150 square centimeters).
- Low background.
- Insensitive to beta and gamma radiation.
- Lightweight, easily handled.

DESCRIPTION

The poppy consists of: (1) a phosphor screen which emits a light flash when an alpha particle strikes it; (2) an electron-multiplier phototube which produces an electrical pulse when activated by the light flash from the phosphor; (3) a preamplifier which sends the pulse to a scaler circuit, and (4) the shell which acts as mounting for the components and keeps ambient light away from phototube.

The phosphor screen is a layer of silver-activated zinc-sulphide powder, forming the alpha-sensitive area of the instrument. The screen is sandwiched between an aluminum foil and a lucite plate. Permafil, an adhesive dielectric, bonds the whole sandwich together into a strong assembly.

Thin aluminum foil (about 0.00025 inch) readily admits alpha particles. The phototube used is an RCA 5819—an end-window electron-multiplier of large, sensitive area. Aluminum case makes for ease in handling.

SPECIFICATIONS

Net Wt: 2 lb, 6 oz including 10 ft of cable and connector.

Preamplifier: 150 volts at 3 milliamps, and 6.3 volts a-c at 0.2 amp.

Output: Pulse-rise time: approximately 1 microsecond Pulse length: approximately 12 microseconds.

Pulse size: sufficient to operate a scaler or noisemaker with 0.25-volt input sensitivity.

Dimensions: $8\frac{1}{2}$ in. over-all length. $2\frac{3}{8}$-in. barrel dia. $6\frac{3}{8}$-in-dia flanged phosphor holder. Screen sensitive area: 150 square centimeters.

Counting efficiency (Pu 239 alphas): 60% average at screen center with 20 foot-candles illumination and 5 counts per minute background; 45% average 6 centimeters from screen center with same illumination and background.

Power requirements: Photomultiplier tube (RCA 5819): 700 to 1250 volts at 25 microamp.

PORTABLE RADIATION PROBE

Interchangeable Caps Provide Selective Detection by Highly Efficient Scintillation Method

A portable model of the scintillation counter described above. Background and plateau length are essentially the same for each respective phosphor. Extremely high thermal neutron counting is made possible by the use of a special G-E phosphor, far superior to enriched boron counters. Thermal neutrons produced by reactors and particle accelerators readily counted. In general health physics work, the thermal neutron detecting unit is especially useful.

Using a ZnS screen for alpha counting, background count is limited to 2 to 5 counts per hour where high-accuracy counting is required. Sodium iodide crystals used in the gamma detecting cap are encased in transparent plastic and mineral oil to eliminate mosture absorption and retain high sensitivity.

A standard connector at the rear of the probe allows connecting cable of any length up to 50 feet. Cable is not supplied with probe but can be obtained at slightly extra cost, if desired. Bulletin GEC-823.

G-E RADIATION LABORATORY EQUIPMENT AND COMPONENTS AVAILABLE

Accelerators, Particle
Alnico Permanent-magnet Materials
Ammeters
Amplifiers
Chambers, Ionization
Controls, Liquid Level
Controls, Millivoltmeter
Controls, Motor
Controls, Pressure
Controls, Remote
Controls, Servo
Controls, Temperature
Counters, Alpha
Counters, Beta
Counters, Gamma
Counters, Neutron
Counters, Proportional
Counters, Radiation
Counters, Scintillation
Counters, X-ray
Crystals, Scintillation
Detectors, Alpha
Detectors, Beta
Detectors, Gamma
Detectors, Leak
Detectors, Neutron
Detectors, X-ray
Furnaces, Electric
Gages, Ionization
Galvanometers
Heaters, Induction HF
Instruments, Recording
Insulators, Quartz
Magnetizers
Meters, Survey, Radiation
Meters, X-ray Intensity
Microammeters
Milliammeters
Monitors, Area
Monitors, Personnel
Motor-generators
Motors, Fractional-hp
Oscillographs
Oscilloscopes
Plastics, Protective
Power Supplies, Regulated
Pyrometers
Readers, Pocket-chamber-electrometer
Recorders, Radiation
Relays, Sensitive
Remote Handling Devices
Silicone Grease
Silicone Rubber
Spectrometers, Mass
Thermocouples
Timers
Transformers
Tubes
Ignitron
Mass Spectrometer
Photomultiplier
Rectifying
Thyratron
Voltage-regulating
X-Ray
Voltmeters
X-ray Diffraction Apparatus

G-E EQUIPMENT FOR NUCLEAR RESEARCH AND APPLICATION

GENERAL ELECTRIC

Apparatus Sales Division

Schenectady 5, N. Y.

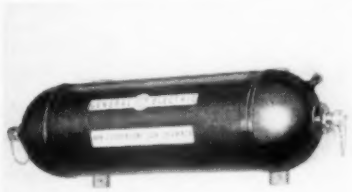
RADIATION MONITOR

Model No. 4SN11A3

An integrating, self-charging device for measuring milliroentgens of gamma radiation. An easily read pointer-type electrostatic voltmeter, an ion chamber, and an electrostatic generator that requires no batteries, tubes, or external power supply are included in this compact unit. Great simplicity and design safety factors provide a convenient and reliable instrument. Scale ranges available: 20, 60 and 300 milliroentgens.

APPLICATION: 1. Monitoring stray radiation to afford safety of personnel in such areas as: (a) Laboratories where radioactive isotopes are handled. (b) Control room and other locations near medical, dental, or industrial x-ray equipment. (c) Areas around particle-accelerator installations. 2. Monitoring in other locations which may be subjected at some time to nuclear radiation. 3. Classroom demonstrations of radioactivity and laboratory experiments with radioactive materials. Bulletin GEC-838.

AIR-EQUIVALENT IONIZATION CHAMBER



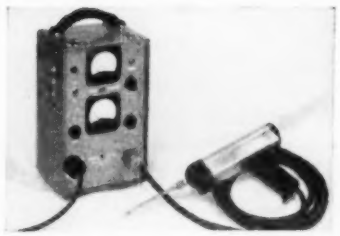
Air-equivalent type: Detects beta and gamma rays and x-rays. Can be used as primary detector of radiation. Sensitive to beta and gamma rays and x-rays with sliding window open and to gamma rays and x-rays only with window closed.

FEATURES: High sensitivity; unique design and all-plastic construction provide minimum dependence on radiation energy, lightweight, excellent mechanical strength, moisture resistance, good thermal properties; easily replaceable insulators and central electrode; models available with attached desiccant (air-drying chamber) for extreme moisture conditions; essentially no microphonics or leakage; smooth surface and contour for easy cleaning, if necessary for decontamination; connection to center electrode can be made at either end of chamber.

APPLICATIONS: Radiation monitoring in atomic energy plants; health monitoring x-ray installations; Civil Defense; calibration of radiation instruments. Bulletin GEC-828.

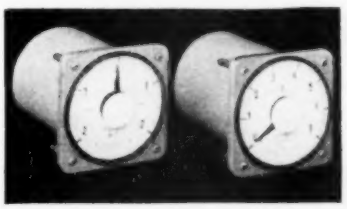
LEAK DETECTOR

TYPE H-1



The leak detector, Type H-1, locates small leaks in tanks, boilers, piping and other closed systems into which a halogen compound can be introduced as a tracer. Portable. Well suited for many phases of nuclear energy work including assembly-line use and service testing in field. Saves time—reduced man-hours required to inspect ordinary joint or seam; saves money—less risk of product breakdowns and expense caused by leaks; compact and portable. Detector unit; 2½ pounds. Control unit; 18 pounds. GEC-233.

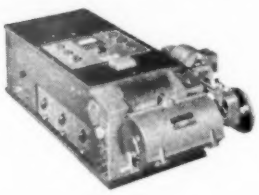
INTEGRATING INSTRUMENTS



G.E.'s two new direct-reading instruments, for integrating deviation and deviation squared, are designed to readily and accurately determine mean and standard deviation of variables encountered in quality-control analysis of continuously moving samples; these instruments can reduce statistical analysis of variables to simple slide-rule calculation. Accuracy of about ±3% full scale is possible when integrating over a two-minute period. Wide applications.

For further information about these unique time-saving instruments contact your nearest General Electric Apparatus Sales Office. For your copy of Bulletin GEC-1230, write to General Electric Company, Section 640-404, Schenectady 5, N.Y.

OSCILLOGRAPHS



TYPE PM-10

Used in the investigation, design, or testing of various machines and devices. Can record up to 12 variables at once. Simultaneous viewing and recording. Timing lines $\frac{1}{60}$ or $\frac{1}{100}$ second apart. Bulletin GEC-449.

TYPE PM-18

Combines versatility and ease of operation with low cost. Produces finished oscillograms in one minute with Polaroid-Land film holder. Can record four quantities simultaneously. Light in weight (30 lb), entirely self-contained. Bulletin GEC-580.

G-E EQUIPMENT FOR NUCLEAR RESEARCH AND APPLICATION

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GENERAL ELECTRIC

Apparatus Sales Division

Schenectady 5, N. Y.

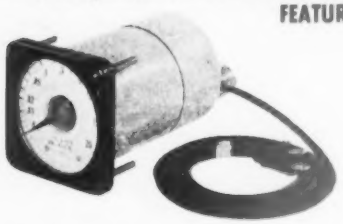
ENRICHED BORON-COATED COUNTER TUBE

For High Efficiency Neutron Counting

G-E boron-coated counter tube detects slow neutrons with high efficiency. Proportional counter has a thin metallic coating of boron 10 on inner surface of cathode. Boron 10 nuclei absorb slow neutrons, then disintegrate into two fragments—one an alpha particle and the other a Lithium 7 nucleus. Both particles ionize heavily giving accurate indication of thermal neutron intensity. Five times as efficient as natural boron. Free from spurious count. Replaceable gas filling. Bulletin GEC-850.

MOLECULAR VACUUM GAGE

For Simplified Vacuum Measurement—Easy Operation—Easy Installation



New G-E Molecular Vacuum Gage is similar to "fluid clutch" in principle of operation. It overcomes many of the problems encountered in the use of other type vacuum gages.

FEATURES: 1. No Primary Element to Burn Out 2. Unharmed when inadvertently opened to Atmospheric Pressure 3. Simplified Operation 4. Highly Versatile

Available in two types, the New G-E Molecular Vacuum Gage is supplied with a scale for the direct reading of dry air or with a linear scale which may be calibrated for other gases. It is therefore suitable for laboratory and research installations. For further information, contact your nearest G-E Apparatus representative or write for Bulletin GEC-986 to:

Section 640-404, General Electric Co., Schenectady 5, N. Y.

FREE CATALOG

G-E MEASURING EQUIPMENT FOR LABORATORY AND PRODUCTION TESTING

Instruments for radiation measurement and also includes: testing and measuring equipment for use in the laboratory and production line. This 64-page catalog is to serve as a reference—to indicate briefly the many instruments available. Simplicity is the keynote with compactness and conciseness. Brief description of each product and its field of application, tables of important characteristics, and prices indicate suitability of device for job. Bulletin GEC-1016A.

New Oiltight

PUSH-BUTTON UNITS

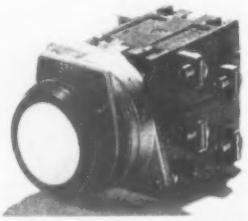
A new push-button unit with building-block construction. It provides flexibility to meet requirements for special units by simple combination of the basic elements, which consist of separable operators, a removable color ring, and a basic contact block.

NEW SEPARABLE OPERATORS:

Operators and contact blocks are furnished separately. Single-, double-, or tandem-contact blocks are quickly and easily attached to any type of operator.

NEW-TYPE CONTACT BLOCK:

A single-pole, double-throw contact block. Double-pole, double-throw combinations made by mounting 2 units on the same mounting plate to form a single compact assembly. Or . . . new tandem combination giving 4 normally open and 4 normally closed contacts can be made by combining 4 blocks with a simple adapter plate. New Self-a-line contacts afford true double break. If stationary contacts become misaligned, the movable contact will align with them and will retain that new alignment.



NEW METHOD OF COLOR IDENTIFICATION

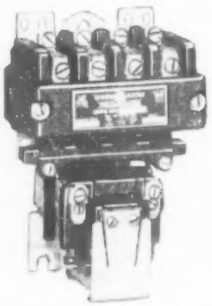
The color coding of this new oiltight line is in a removable colar ring which screws onto a neutral-colored button. Rings are available in black, red, green, yellow, and white. A push button or selector switch of any color may be converted to any other color merely by interchanging color rings. With a few separate color rings you can save time and money in making up special forms.

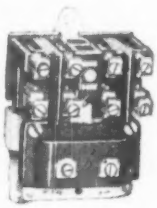
20 COMBINATIONS POSSIBLE

With the use of 2 operators, 5 color rings, and 2 contact blocks, 20 combinations can be made to fill the need for special units. Bulletin GEA-5779.

A-c CONTACTORS

25 AMP MAX 60-25 CYCLES





These General Electric CR2810 and CR2811 contactors provide in a small space a simple, sturdy means of controlling power. They may be used to handle almost any type of load.

FEATURES: Long Life . . . Exclusive strong-box coil; no metal-to-metal friction; good magnet design; simple moving structure. Easy maintenance . . . Contacts easily removed without disturbing wiring; contact spring cannot be lost; easily disassembled. Flexible . . . Tips readily changed from normally open to normally closed without additional parts; double circuit interlocks available; coil easily replaced. Bulletin GEA-5154.

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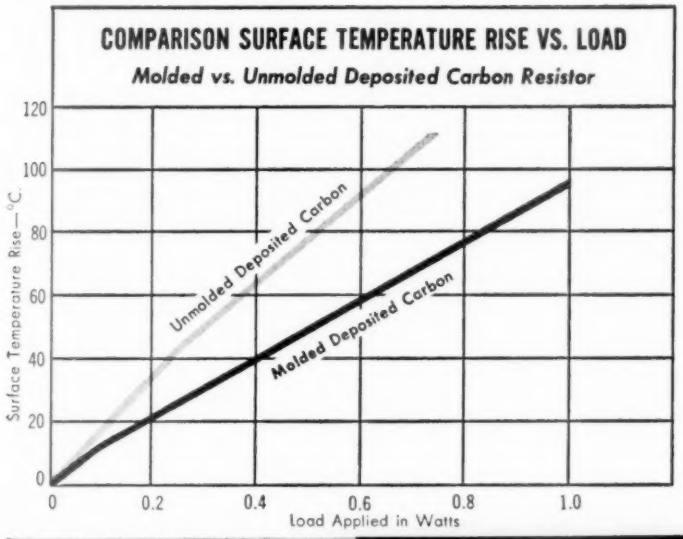
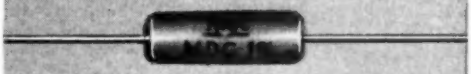
a *molded* deposited carbon resistor

The added advantages of *molded* insulation are now available for ½ Watt Deposited Carbon Resistors. New Type MDC is a 1% precision film resistor combining high stability, small size and low cost. The molded plastic housing provides complete mechanical protection, minimizes the effect of moisture and improves load life characteristics.



Improved Load Life Characteristics with MDC



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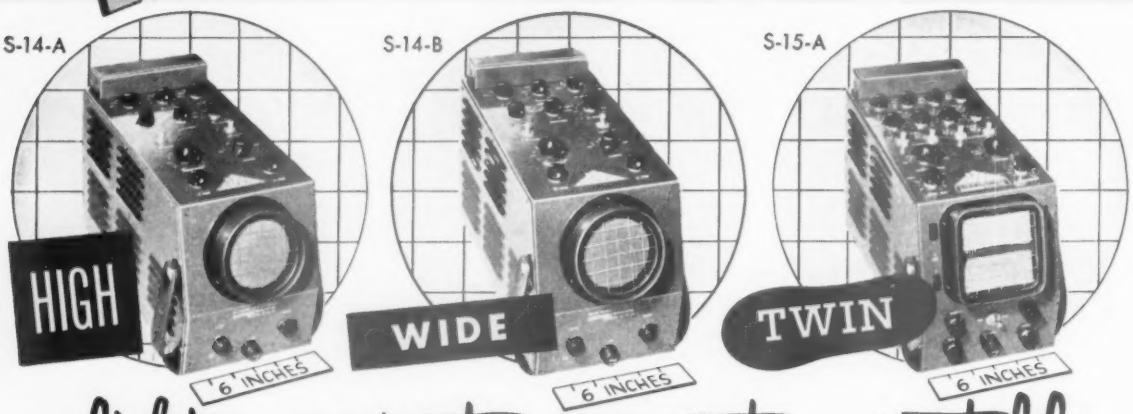
Waterman POCKETSCOPE

The Pocket-Size Oscilloscope

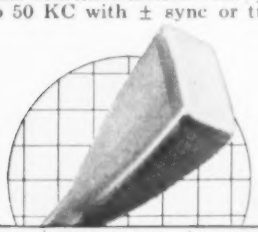


...light...compact...accurate...portable

Featuring small size, light weight and outstanding performance the HIGH, WIDE and TWIN POCKETSCOPES have become the "triple threat" of the oscilloscope field. Their incomparable versatility, reliability and accuracy have skyrocketed this team of truly portable instruments into unparalleled demand. Each oscilloscope features DC coupled amplifiers in both vertical and horizontal channels.

HIGH

The S-14-A HI-GAIN POCKETSCOPE provides the optimum in oscilloscope flexibility for analysis of low-level electrical impulses. Extremely light weight (12¾ lbs.), compact in size (12 x 5¾ x 7 in.), dependable and accurate in performance. Vertical and horizontal channels: 10mv rms/inch with response within 2DB from DC to 200 KC and pulse rise of 1.8 μs . . . non-frequency discriminating attenuators and gain controls with internal calibration of trace amplitude . . . repetitive or trigger time base with linearization from ½ cycle to 50 KC with ± sync or trigger.



WIDE

The S-14-B WIDE BAND POCKETSCOPE is ideal for investigations of transient signals, DC signals, aperiodic pulses or recurrent waveforms. Vertical channel: 50 mv rms/in. within —2DB from DC to 700 KC . . . pulse rise time of 0.35 μs. Horizontal channel: 0.15v rms/in. within —2DB from DC to 200 KC . . . pulse rise of 1.8 μs. Attenuators and gain controls are non-frequency discriminating . . . trace amplitude calibration . . . repetitive or triggered time base from ½ cycle to 50 KC . . . ± sync or trigger . . . trace expansion, filter graph screen and many other features . . . 14 lbs. . . . 12 x 6 x 7 inches.

TWIN

The S-15-A POCKETSCOPE is a portable, twin tube, high sensitivity oscilloscope with two independent vertical as well as horizontal channels. It is indispensable for investigation of electronic circuits in industry, school and laboratory. Vertical channels 10 mv rms/in. with response within—2DB from DC to 200 KC and pulse rise time of 1.8 μs . . . horizontal channels 1v rms/in. within —2DB from DC to 150 KC . . . non-frequency discriminating controls . . . internal signal amplitude calibration . . . linear time base from ½ cycle to 50 KC, triggered or repetitive, for both horizontal channels.

S-11-A

The S-11-A INDUSTRIAL POCKETSCOPE is a small, compact (5x7x11 inches), and lightweight (8¾ lbs.) instrument for observing electrical circuit phenomena. The flexibility of the POCKETSCOPE permits its use for AC measurements as well as for DC. The vertical and horizontal amplifiers are capable of reproducing within —2DB from DC to 200 KC with a sensitivity of 0.1v rms/in. . . . repetitive time base from 3 cycles to 50 KC continuously variable throughout its range . . . variations of input impedance, line voltage or controls do not "bounce" the signal—the scope stabilizes immediately.

RAYONIC CATHODE RAY TUBES BY WATERMAN

TUBE	PHYSICAL DATA		STATIC VOLTAGE		DEFLECTION*		LIGHT OUTPUT**
	FACE	LENGTH	A3	A2	VERT	HOR	
3JP1	3"	10"	3000	1500	111	150	352
3MP1	3"	8"		750	99	104	33
3RP1	3"	9.12"		1000	61	86	44
3SP1	1.5x3"	9.12"		1000	61	86	44
3XP1	1.5x3"	8.875"		2000	33	80	218

The basic properties of the cathode ray tube that concern the designer or the user are: deflection sensitivity, unit line brightness, line width, static voltage requirements and physical size. A comparison between cathode ray tubes manufactured by Waterman Products Company is shown in the table adjoining. These tubes are available in P1, P2, P7 and P11 phosphors. 3JP1, 3JP7, 3SP1 and 3XP1 are available as JAN tubes.

*Deflection in volts per inch.

** *Light output of an element of a raster line (one mm long and not exceeding .65 mm in width) in microlumens.*

Write for your complimentary copy of "POCKETSCOOP" • Official Waterman publication.

PULSESCOPE by Waterman

The Oscilloscope that Portrays the Pulse

Classic Examples of Precision Engineering...

The PULSESCOPES are cathode ray tube oscilloscopes that portray the attributes of the pulse: shape, amplitude, duration and time displacement. All PULSESCOPES have internally generated markers with the basic difference that in the SAR PULSESCOPE the markers initiate the sweep while in the others the sweep starts the markers.

BROAD

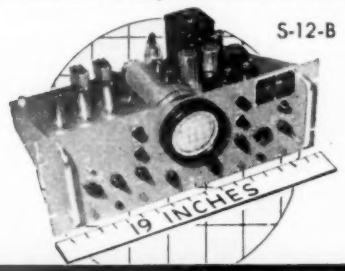
The S-6-A BROAD BAND Scope is a PULSESCOPE in performance, POCKETSCOPE in size. The instrument measures DC as well as AC signals. Unique DC calibration methods permit rapid measurements of either positive or negative, AC or DC signals. Vertical amplifier sensitivity of 0.2v rms/inch, and response to 5 mc within 3DB . . . pulse rise time of 0.1 μs . . . internal markers from 1 to 1000 μs . . . repetitive or trigger sweep from 5 cycles to 500 KC with 5X sweep expansion . . . sweep, marker and DC calibrating voltage available externally. Size 8½ x 6¾ x 13¾ in. Weight 22 lbs. Operates from 50 to 400 cycles at 115 volts AC.

LAB

The S-5-A LAB PULSESCOPE is a JANized (Gov't Model No. OS-26) portable, AC, wide band-pass, laboratory oscilloscope ideal for pulse as well as general purpose measurements. Internal delay of 0.55 μs permits observation of pulse leading edge. Includes precision amplitude calibration, 10X sweep expansion, internal trace intensity time markers, internal trigger generators and many other features. Video amplifier 0.1v p to p/inch . . . pulse rise time of .035 μs or response to 11 mc. 1.25 to 125,000 μs triggered or repetitive sweep . . . internally generated markers from 0.2 to 500 μs . . . trigger generator from 50 to 5000 pps. for internal and external triggering. Operates from 50 to 400 cycles at 115 volts AC.

SAR

The S-4-C SAR PULSESCOPE is a JANized (Gov't Model No. OS-4) portable instrument (31.5 lbs.) for precision pulse measurements for radar, TV and all electronic measurements. Portrays all attributes of the pulse . . . internal crystal controlled markers of 10 and 50 μs available for self-calibration . . . in R operation a small segment of the A sweep is expandable for detailed observation with a direct-reading calibrated dial accurate to 0.1%. Video amplifier band-pass up to 11 mc . . . optional video delay 0.55 μs . . . pulse rise and fall time better than 0.07 μs . . . R pedestal (sweep) 2.4 to 24 μs . . . video sensitivity of 0.5v. p to p/inch. Easily convertible from μs to yards. Operates from 50 to 400 cycles at 115 volts AC.



RAKSCOPE

Because the panel is only 7" high and fits any standard rack, the S-12-B RAKSCOPE admirably fills the need for a small oscilloscope of wide versatility. With all the features of the S-11-A POCKETSCOPE, the RAKSCOPE is JANized (Gov't Model No. OS-11), and has many additional advantages; the sweep, from 5 cycles to 50 KC, is either repetitive or triggered . . . vertical and horizontal amplifiers are 50 mv rms/inch with band-pass from 0 to 200 KC . . . special phasing circuitry for frequency comparison.

WATERMAN PRODUCTS CO., INC.

WATERMAN PRODUCTS

PHILADELPHIA 25, PENNA., U.S.A.

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Manufacturers of POCKETSCOPES® • RAKSCOPES® • PULSESCOPES® and RAYONIC® TUBES

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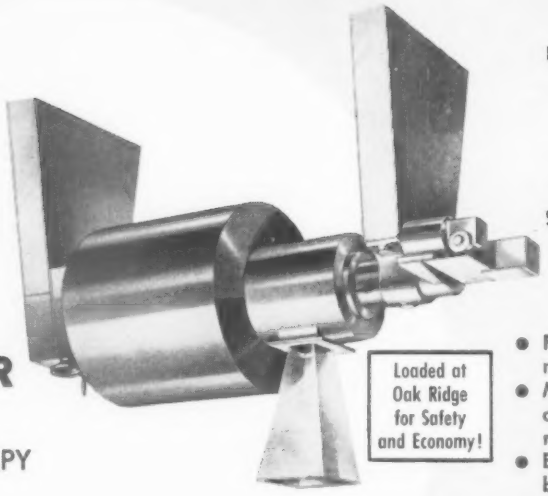

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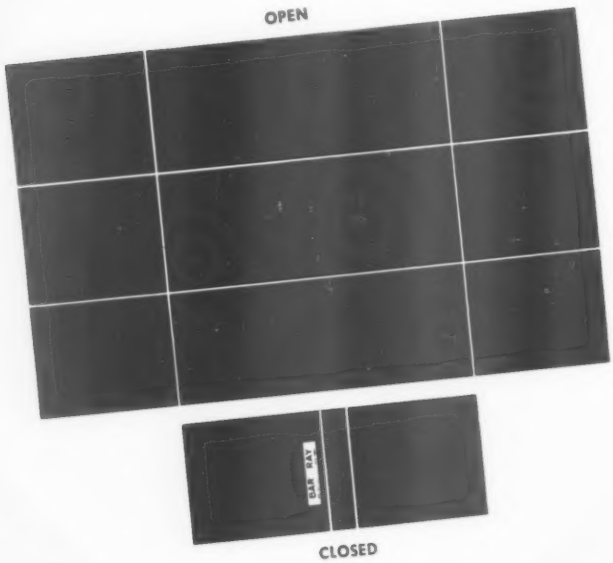
and
Plastic Backed Lead Screens

- Heavy duty construction.
- Double overlap.
- 100% Lightproof.
- Accommodates films and screens.
- In all standard sizes; special sizes made to order.

*Bar-Ray, manufacturing licensee



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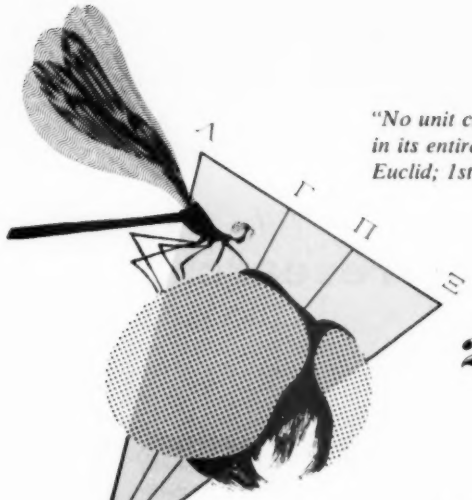
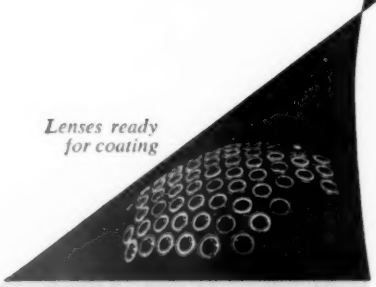


"No unit can be seen simultaneously in its entirety."
Euclid; 1st. theorem of optics.

2076 eyes

custom optics in quantity



Lenses ready for coating

It doubtless took ages to develop the Dragonfly's many faceted eye. Today, at Kollsman, highly complex optical systems such as photoelectric trackers, periscopic sextants, telescopes for radar bombing systems, and others, are not only designed expeditiously, but are produced in quantity.

Kollsman represents something new in optics. This is because the Kollsman Optical Department, established in 1940, grew up within a company devoted for over 25 years to designing and producing some of the most complex instruments and controls in the aviation industry. Aviation moves as fast as tomorrow's guided missile. It is this quality of up-to-dateness you will find in our entire optical operation.

Here we have the finest talents and tools to be found anywhere for the solution of your optical problems. Consult us without obligation on any or all phases of

DESIGNING • DEVELOPING • TESTING • PRODUCING MODERN OPTICS

COMPONENTS

Lenses, windows and prisms
Aspherical objectives and mirrors
Cones and rods for ranging devices
Hyper- and hypo-hemispherical sighting domes
Retroreflectors • Roof prisms
Annular prismatic scales • Special reticles

COMPLETE DEVICES OR SYSTEMS

Binoculars • Critical wide angle photographic lenses (11 elements)
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Anti-aircraft fire control sights (used in the famous Skysweeper)
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Astrocompasses • Photoelectric trackers

WRITE for our new brochure "2076 Eyes"

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new master-slave manipulator

with important refinements by

central research

Central Research's master-slave manipulator, Model 8, for remote handling. New design allows the operator to remain in one spot, close to the viewing window, though slave ends are widely separated.

Easier sight-control—Model 8 increases the operator's range without making him move from the window. An electrical drive varies the angular position of the slave arm independently of the master end, allowing the operator to move slave ends up to the window without stepping backwards.

Highly accurate "sense of touch"—Operator requires practically no training period to "feel" remote objects. Natural motions of hands are copied exactly. Rigidity is high; lost motion, residual unbalance and frictional forces are extremely slight. Slave ends are so easy to control that numerous types of dexterity-requiring operations can be performed, such as opening containers, tying knots, lighting matches and assembling nuts and bolts.

Greater working range and capacity—A pair of arms completely cover a flat working area 5 feet deep by 8 feet wide at a height of 40 inches. At a height of 66 inches, a useful depth of 8 feet can be reached. 10 to 15 lbs. are easily handled in any operation. Much heavier loads, up to 60 lbs., can be lifted vertically by an auxiliary hook.

Easier to install and service—Model 8 mounts in the vertical face of a cell through an 8 inch diameter opening at a height of 10 ft. Electrical drive raises slave end to horizontal position so that in less than five minutes, one man, using a light overhead crane, can remove and relocate manipulators.

Greater versatility—A wide variety of interchangeable tongs and tools can be remotely changed at will. A flexible rubber boot, also optional, protects slave ends from contamination, corrosion and dust. Locking gripping motion is standard, and optional locks can also be supplied for all other motions.

do you have hot-cell design problems?

For a coordinated design why not consult Central Research?

DESIGN-ENGINEERING-PRODUCTION

Manipulators • Cranes • Windows • Shielding

Telescopic Shields • Hot-Cell Layout

You are invited to make use of the mock-up facilities and demonstration manipulators at our plant in trying your requirements from a dimensional and handling standpoint. We are proud of the fact that the majority of manipulator installations developed from basic designs of the Remote Control Engineering Division of Argonne National Laboratory have been made by us. Our experience and record of pleased customers is your assurance of satisfaction.

cleared personnel available for consultation

For complete information, write to

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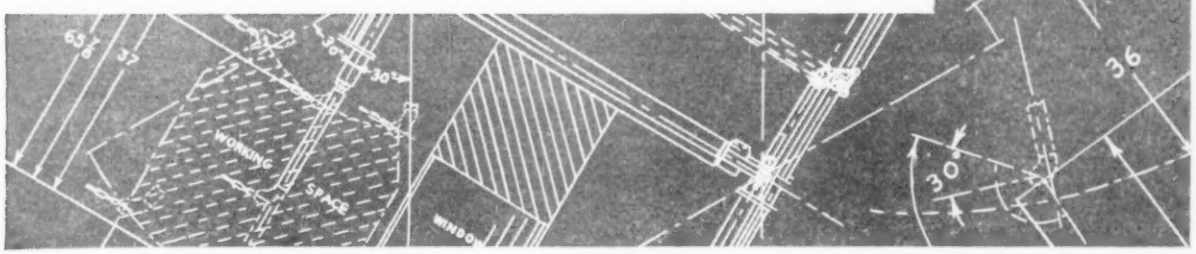

New Bendix direct-reading

POCKET DOSIMETERS

offer the

WIDEST RANGE OF SENSITIVITY!

approved!

GENERAL SPECIFICATIONS

Widest selection of range sensitivity to Gamma and X-Radiation From: 0-5r to: 0-1000r Full Scale.

Accuracy: ±10% of true dose for Radium or Cobalt 60 Gamma Rays.

Energy independent within ±25% of true dose from 50 Kev to 2 Mev.

Extremely low electrical leakage even after being grossly over-exposed to gamma radiation at rates in excess of 600,000 R/hr.

Extremely rugged—the ultimate in mechanical design.

True hermetic seal. No correction factors need be applied for temperature and pressure variations.

Thermal Neutron Sensitive Dosimeter, Model No. 609, which, in addition to gauging thermal neutrons, possesses all the features exclusive to Bendix for the Gamma and X-Ray Dosimeters.

Full-scale equivalent to two daily tolerance exposures to thermal neutrons, based on an allowable daily dose of 1750 thermal neutrons/Cm²/sec. for an eight-hour day.

MODELS AND RANGES

Model No.	Full-Scale Range	A.E.C. Cat. No.	Civil Defense or Military Designation
611	0-5 r	PIC-54A	—
608	0-10 r	PIC-54B	MIL: IM-19/PD
622*	0-20 r	PIC-54C	C.D.: V-730
610	0-50 r	PIC-54D	MIL: IM-20/PD
619*	0-100 r	PIC-54E	C.D.: V-740
638	0-200 r	—	—
616	0-500 r	PIC-54F	—
686	0-600 r	—	MIL: IM-93/UD
623	0-1000 r	—	—
609	0-2 tolerance doses of thermal neutrons.	PIC-52A	—

Charging: Charging voltage approximately 160 volts.
May be charged on Bendix chargers Model Nos. 613 and 643.

*ATTENTION: CIVIL DEFENSE DIRECTORS. These models meet and surpass the exacting requirements for civil defense organizational dosimeters V-730 and V-740 as outlined in the FCDA Standard Item specification dated February, 1954. *Write for special civil defense prices.*

BENDIX DOSIMETER CHARGING UNITS

Model No. 613. A.C. Line-operated charger • Operates on from 50-60 cycle 100 to 130-volt power line • Requires 3 watts • No batteries.

Model No. 643. (Illustrated) Operates on a 1½-volt flashlight battery • Fulfills and surpasses Federal Civil Defense Standard Item Specifications for Dosimeter Charger V-750, dated March, 1954 • May be operated from an automobile cigar lighter by means of a special built-in adapter.

EXCLUSIVE FEATURES of all Bendix Charging Units • Will charge any self-indicating dosimeter built to government specifications • No expensive batteries • Easy to maintain and decontaminate • Fool-proof charging contact.

Patents applied for on Bendix Dosimeters and Charging Units

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Advances in Applied Radiation

DEVELOPMENTS in the FIELD OF APPLIED RADIATION ENERGY, its APPLICATIONS and the APPARATUS USED TO PRODUCE IT

Research in Radiation Crosslinking of Plastics

The past 18 months has seen a remarkable rise in the attention given by industrial scientists to the possible commercial applications of radiation energy. This work was greatly intensified after publication of the work of Charlesby* in changing the characteristics of polyethylene by radiation bombardment. Normally a thermoplastic, polyethylene becomes thermosetting after exposure to high doses of ionizing radiation. Not only is its resistance to many solvents increased, but also its plastic memory and its resistance to stress-cracking. Most dramatic, however, is the ability of irradiated polyethylene to hold its shape at higher than normal temperatures. These changes in physical properties are a consequence of the crosslinking produced by radiation energy, and it is this phenomenon that has created so much interest.

Many other high polymers have been investigated in recent months. Some, such as polyvinyl chloride and methyl methacrylate, degrade in the presence of ionizing energy. Others, such as polystyrene and certain rubbers, appear to crosslink. The silicones in particular look promising because cures can be effected at relatively low dosages and in a very short space of time.

Although some of the work now going on in this field looks toward more immediate applications of radiation-crosslinked polymers, much is of a fundamental nature, directed to learning more about the mechanisms of interaction and to creating polymers and copolymers to take advantage of the unique characteristics of this interaction. Considerable attention is also being given to the use of radiation as a catalyst in the polymerization reaction itself.

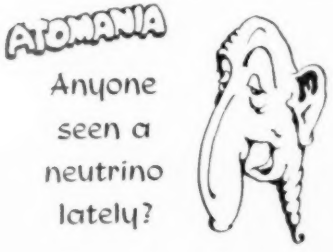
*"Crosslinking of Polythene in the Atomic Pile," BRITISH PLASTICS, March 1953

Production-line Irradiation at HIGH VOLTAGE

Consistent with its role as a producer of machine sources of high-energy radiation, HIGH VOLTAGE is vitally interested in accelerating research in this field. During the past 12 months, HIGH VOLTAGE has made its radiation facilities available on a nominal rental basis to more than 80 companies for research with 2-million-volt electrons. Recently, a conveyor system has been installed so that samples may be loaded and unloaded at a central station outside the radiation room and processed on a continuous production-line basis without interruption. Samples are conveyed under the electron beam in trays approximately 12 inches long by 6 inches wide, the conveyor speed being set to deliver 2 million rep per pass under the beam. With the installation of this new conveyor system, HIGH VOLTAGE is able to process samples and small production lots at rates up to 400 pounds per hour per megarep on a continuous basis. We will be glad to supply details.

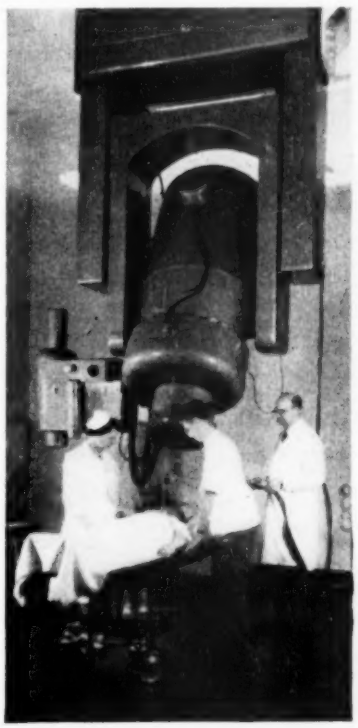
One of the regular users of HIGH VOLTAGE's electron radiation facilities is the U. S. Army Quartermaster Corps. HIGH VOLTAGE is one of the contractors under the QM Food and Container Institute's Radiation Sterilization project. Both Food and Container Institute and the QM's Pioneering Research Laboratories, Natick, Mass. are conducting work in this long-range program of fundamental research into the use of radiation energy as a means of food preservation. HIGH VOLTAGE is proud to be associated with this project, which may prove to be of far-reaching consequences to the military services and to the food industry.

HIGH VOLTAGE's *2-MeV Van de Graaff Model AK research accelerator is well adapted for use in laboratories engaged in diversified studies in physics, chemistry, and metallurgy. This unit produces the following radiations: electrons — 250 microamperes, positive ions — 75 microamperes, x-rays — 5000 roentgens/minute at 10 cm., neutrons — up to 5 x 10⁶ n/sec-cm². Write for Bulletin AK.*



Pondville State Hospital

The newest installation of a two-million-volt Van de Graaff x-ray generator for supervoltage therapy has recently been completed at the Pondville State Hospital, Norfolk, Massachusetts. This is the fourth Van de Graaff for the treatment of cancer to be installed in the New England area. One of these is in use at the Massachusetts General Hospital in Boston, and two are located at the Massachusetts Institute of Technology (Lahey Clinic), Cambridge. A fifth unit will be installed in a few months at the Hospital for Chronic Diseases in Boston.



Complete information on the Van de Graaff for supervoltage therapy is offered in our new 12-page Bulletin M, written to aid the radiologist in evaluating a number of interrelated technical factors involved in the choice of supervoltage equipment—including x-ray quality and output, field size and definition, and equipment and installation costs.

HIGH VOLTAGE ENGINEERING CORPORATION
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Next Steps in Atomic Progress . . . A Challenge to American Industry

The purpose of this editorial is to throw light on the significance for American industry of recent changes in the statutes that control the development of atomic energy.

The need for clear light on the meaning of this new legislation is made more urgent by the political confusion and distortion that marked its course through Congress. The politically inspired charges of "giveaway" that delayed its passage—charges that were almost totally unrelated to the legislation itself—helped to obscure the vital importance of the step finally taken by Congress.

In sober, post-Congressional fact, the principal significance of the new atomic legislation is that it extends to private enterprise responsibility for the development of peaceful uses of atomic energy, whereas heretofore this responsibility has rested in a tight government monopoly. **And this extension is made on terms that emphasize the responsibility far more than they open any opportunity for economic gain in fulfilling it.** The revised Atomic Energy Act provides that:

1. Industry may now own and operate its own nuclear reactors, under license from the Atomic Energy Commission. And it may build and sell nuclear reactors for export.

2. Industry may use—but not own—nuclear materials at the discretion of the Atomic Energy Commission.

3. The Atomic Energy Commission will make available to industry scientific knowledge that may be useful in developing peaceful applications of nuclear energy.

4. For the first time, industry will have the right to patent inventions in the field of nonmilitary nuclear energy. However, "basic" discoveries must be made available to all companies in the field for a period of five years, after which they, too, will revert to normal patent status.

Two Kinds of Know-How

These provisions, despite the imposed limitations, represent the first positive step toward development of nuclear energy for peaceful applications in the United States. Potentially useful knowledge, previously locked in the minds of government scientists, will now be available to all those who are willing and able to put it to work for the good of mankind.

The advantages to be gained from enlisting the talents of American industry in the development of peaceful atomic applications are imposing. As *The* (London) *Economist*, Europe's leading economic journal, recently remarked, "The atomic scientists are in a position to surmise how atomic energy can be applied... but they lack the specialized knowledge of engineering design and operating technique just as industry itself lacks atomic knowledge." Now the engineers of private industry need no longer lack the atomic knowledge, and there is granted to them at least a restricted freedom to apply it to the solution of their engineering and operating problems.

But the new opportunity for private industry to find constructive uses for the science of nucleonics carries with it a grave responsibility. These uses must be so developed that they will benefit the people of all the free nations. It is essential that the United States, which pioneered in developing lethal uses for atomic fission, demonstrate to the world our paramount interest in its peaceful application. It would be a moral set-back to the free world almost beyond calculation if the Communists should be able to offer to the poorer nations of the world the benefit of low cost atomic power—provided by Communist technicians—while we concentrate primarily on building our stockpile of atomic and hydrogen bombs.

Race For a Peaceful Victory

Most of the experts are agreed that it may be many years—perhaps ten, fifteen or more—before the cost of electricity from atomic fission can be reduced to a level that will make it competitive with conventionally produced power in most regions of the United States. But most of the world is not nearly so fortunate as we are in power resources. Electricity, even at a cost far higher than the average that prevails in the United States, would be a blessing in many countries, and the nation that provides the technology to bring it into being will score a great moral victory.

The useful potential of nuclear energy is not restricted to the generation of electric power—although twenty years from now this use will be highly important to the power industry of the United States. Even with the limited research that has been done in this field thus far, the use of radioisotopes—the radioactive products of atomic reactors—is saving American industry an estimated $100 million a year. Commissioner Campbell of the AEC, who made this estimate, believes that these savings may well reach $1 billion a year within ten years. Radioisotopes are already at work in industries rang'ng all the way from paper manufacturing, where they measure paper thickness, to pipeline transportation, where they mark the dividing lines between shipments of different products (at an estimated saving of $500,000 a year). Medical applications of these same radioisotopes hold promise of longer and more comfortable lives for those who are stricken by cancer and other diseases.

Above All a Challenge

The new Atomic Energy Act is a crucial stride toward the day when all these benefits—and undoubtedly others not yet revealed by research—will be realized. But it is a step that is essentially permissive. It still leaves it to private industry for the most part to decide what is to be done and how soon.

The new act is thus, above all, a challenge. It confers on private industry the responsibility to assume a leading role in the development of peaceful uses for nuclear energy, a step long urged by NUCLEONICS, a McGraw-Hill magazine devoted to atomic energy. To achieve a success in this task that will measure up to the requirement of the national interest, this development must command all the resources and ingenuity that private enterprise can apply—and do so without promise of glittering prizes surely to be won. **But now that the responsibility has been defined and the challenge offered, American industry will, we believe, measure up to its grave and mighty import.**

This message is one of a series prepared by the McGraw-Hill Department of Economics to help increase public knowledge and understanding of important nationwide developments that are of particular concern to the business and professional community served by our industrial and technical publications.

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Send for bulletin with chart of mechanical and electrical products; design principles for ceramics.

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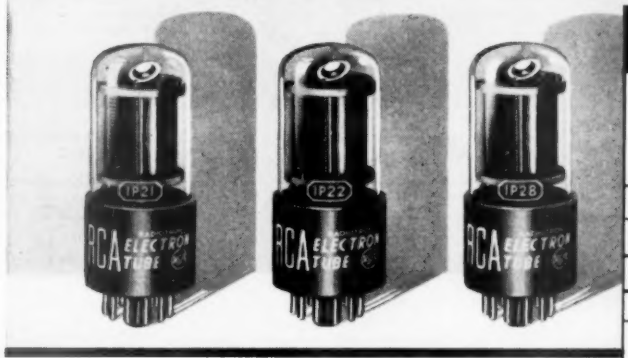

Check your application—pick your multiplier phototube

RCA Type	Application	Spectral Response	Wavelength of Max. Response (Angstroms)	Sensitivity at Max. Response (ua/uw)	Equivalent Noise Input at 25° C—Lumens
6372	Scintillation Counting	S-4	4000	18,600	1×10^{-10}
6342	Scintillation Counting	S-4	4000	7,000	7×10^{-12}
5819	Scintillation Counting	S-4	4000	23,200	2×10^{-11}
6199	Scintillation Counting	S-4	4000	22,300	4×10^{-12}
6217	Spectrometry	S-10	5600	8,500	4×10^{-11}
1P21	Light & Color Measurements	S-4	4000	74,000	5×10^{-13}
1P22	Colorimetry & Spectroscopy	S-8	4200	370	Over 1×10^{-10}
1P28	Light & Color Measurements	S-5	3400	22,600	7×10^{-12} (For ultraviolet, 6×10^{-15} watts)

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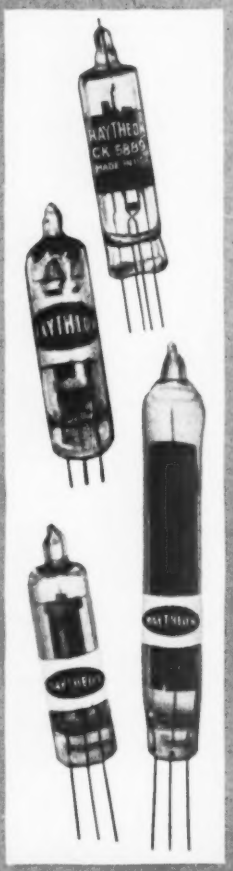
TYPE	MAX. DIMENSIONS Inches		OPERATING VOLTAGE RANGE	PLATEAU LENGTH	RELATIVE PLATEAU SLOPE	GEIGER THRESHOLD Volts dc	BACK-GROUND Unshielded	AMBIENT TEMP. RANGE	WALL WEIGHT Nominal	EFFICIENCY	LIFE
	Length	Diam.	Volts dc	Volts dc	Per 100v	max.	counts/min.	°Cent.	mg./sq. cm.	%	counts
CK1020	6	¾	850-950	150	3%	850	60	−40 to +55	35	90	$>10^8$
CK1021	5¼	21/32	850-950	150	3%	850	60	−40 to +55	35	90	$>10^8$
CK1026	3	¾	850-950	150	30%	760	30	−70 to +50	175		$>10^8$
CK1029	5¼	21/32	850-950	150	3%	850	60	−40 to +55	35	90	$>10^8$
CK1034	2⅜	0.400	700		20%	585		−55 to +70	Hvy.		$>10^{10}$
CK1044	1⅝	0.400	700			585		−55 to +70			$>10^{10}$



RAYTHEON SUBMINIATURE ELECTROMETER TUBES

TYPE	HTR or FILAMENT			MAX. DIMENSIONS Inches			PLATE VOLTS	GRID 1 VOLTS	GRID 2 VOLTS	PLATE CURR. ma.	GRID 2 CURR. ma.	AMP. FACT.	PLATE RESIST. meg.	MUT. COND. μmhos	GRID CURRENT RATING
	Volts	Ma.	Type	Length	Width	Thick-ness									
CK5886	1.25	10	Fil	1.5	.400	.285	10.5	−3.0	Triode 0.2 Conn.			2		160	Max. $1c^1 = 2 \times 10^{-13}$ amp.
CK5889	1.25	7.5	Fil	1.6	Diam.	−.400	12	−2.0	4.5	0.005	0.005		18	14	Max. $1c^1 = 3 \times 10^{-15}$ amp.

RAYTHEON RECTIFIER TUBES

TYPE	CONSTRUCTION	FILAMENT		MAX. DIMENSIONS Inches		MAX. PEAK INVERSE VOLTAGE	MAX. PEAK PLATE CURRENT PER PLATE	MAX. DC OUTPUT CURRENT
		Volts	Amps	Height	Diam.			
CK1036	Half Wave — Gas	Cold Cathode		1 13/16	0.400	1500	10 ma.	100 μa.
CK1041	Half Wave — High Vacuum	1.25	0.05	1½	0.400	12.5KV	500 μa.	10 ma.
CK1042	Half Wave — Gas	Cold Cathode		2⅛	0.400	2800	40 ma.	8 ma.
CK5517	Half Wave — Gas	Cold Cathode		2¼	¾	2800	100 ma.	12 ma.
CK5785	Half Wave — High Vacuum	1.25	0.015	1.5	0.3 x 0.4	3500	450 μa.	100 μa.
CK6174	Half Wave — Gas	Cold Cathode		2¼	¾	2800	30 ma.	3 ma.

RAYTHEON VOLTAGE REGULATOR — VOLTAGE REFERENCE TUBES

TYPE	MAX. DIMENSIONS Inches		MIN. STARTING VOLTAGE SUPPLY	OPERATING VOLTAGE Approx.	MIN. OPERATING CURRENT ma.	MAX. OPERATING CURRENT ma.	MAX. REGULATION Volts
	Height	Diam.					
OA2	2⅜	¾	185	150	5	30	6
OB2	2⅜	¾	133	108	5	30	4
OB2WA	2⅜	¾	133	108	5	30	2
CK1022	2 1/16	¾	1100	1000	0.005	0.055	20
CK1037	1.75	0.400	730	700	0.005	0.100	15
CK1038	1.75	0.400	930	900	0.005	0.055	15
CK1039	1.75	0.400	1230	1200	0.005	0.100	25
CK5651	2⅛	¾	115	82-92	1.5	3.5	3
CK5651WA	2⅛	¾	115	82-92	1.5	3.5	3
CK5783	1⅝	0.400	115	82-92	1.5	3.5	3
CK5783WA	1⅝	0.400	115	82-92	1.5	3.5	3
CK5787	2 1/16	0.400	145	100	5	30	6
CK5787WA	1⅝	0.400	115	83-89	1.5	3.5	3
CK5962	2 1/16	¾	730	700	0.002	0.055	15
CK6213	1⅜	0.400	200	127-133	1	2.5	2
CK6542	2⅛	0.400	185	142-162	5	30	6

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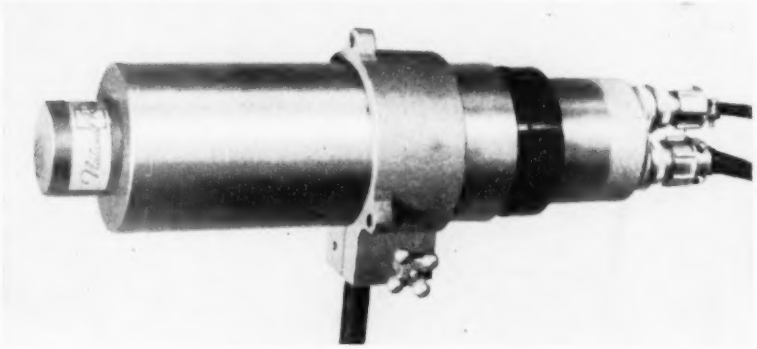
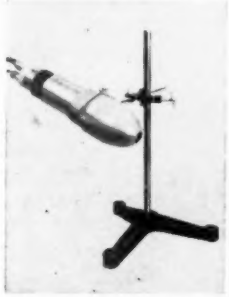
Crystals, sealed in thin-walled containers, may be inserted directly in radiation beam. Uses 6292 or 5819 or 6342 photomultiplier tube and improved circuit. 100 ohm output impedance, permits up to 50 ft. of cable. Model SA-2 has self-contained, two-stage preamplifier with gain of ten. Easily provides 1 volt output pulses. Plateau slope is 3% per 100 v. Model SC-2 has cathode follower output. Plateau slope is 2% per 100 v.



COLLIMATOR ATTACHMENT

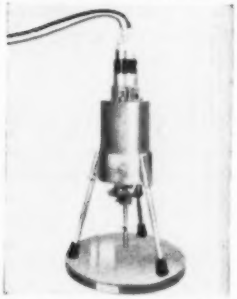


Model LC-2 Collimator Attachment mounted on scintillation counter. Includes large, one-inch diameter by one-inch long sodium iodide crystal for high sensitivity. Highly directional lead shield in front and behind crystal insures low background. Convenient adjustable clamp and stand.

WELL TYPE SHIELD

Model LW-2 Shield Attachment holds scintillation counter and two-inch diameter well-type sodium iodide crystal. Provides full two inches of lead shielding in every direction, including below counter. Low background, high sensitivity. Crystal or counter instantly removable.

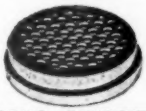
SAMPLE CHANGER



Model SM-2 Manual Sample Changer Attachment holds scintillation counter and crystal detectors. Provides two inches of lead shielding. Holds standard planchets.

A Complete Assortment of Crystal Radiation Detectors for Every Counting Need

Hermetically sealed, thin-walled containers. Optical glass windows. Transmits ultra violet. Interchangeable, permanent, light tight.



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Alpha particle counter. Light tight, insensitive to other radiations.

Hermetically sealed sodium iodide crystal. Best for gamma rays.

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Sodium iodide, well type crystal. Has ¼ inch diameter by 1½ inch deep well.

WELL TYPE CRYSTAL

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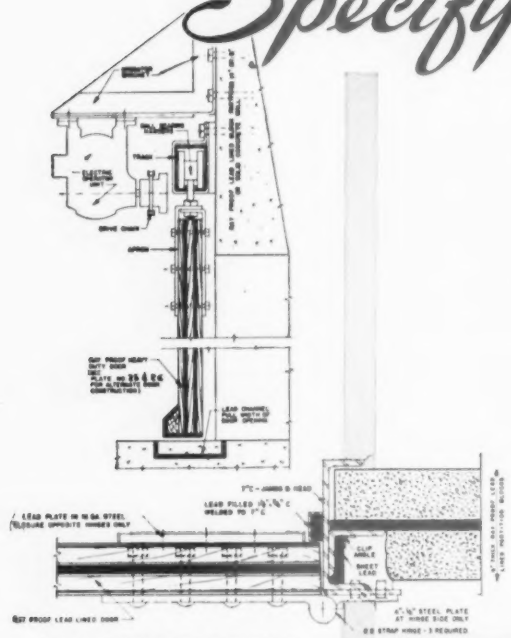

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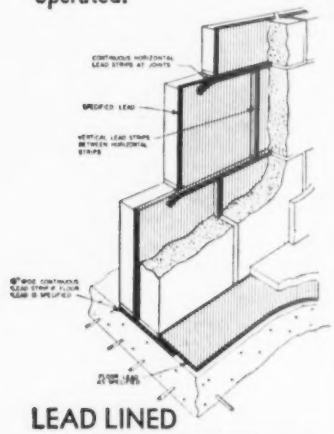

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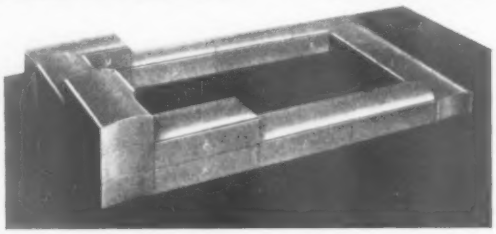

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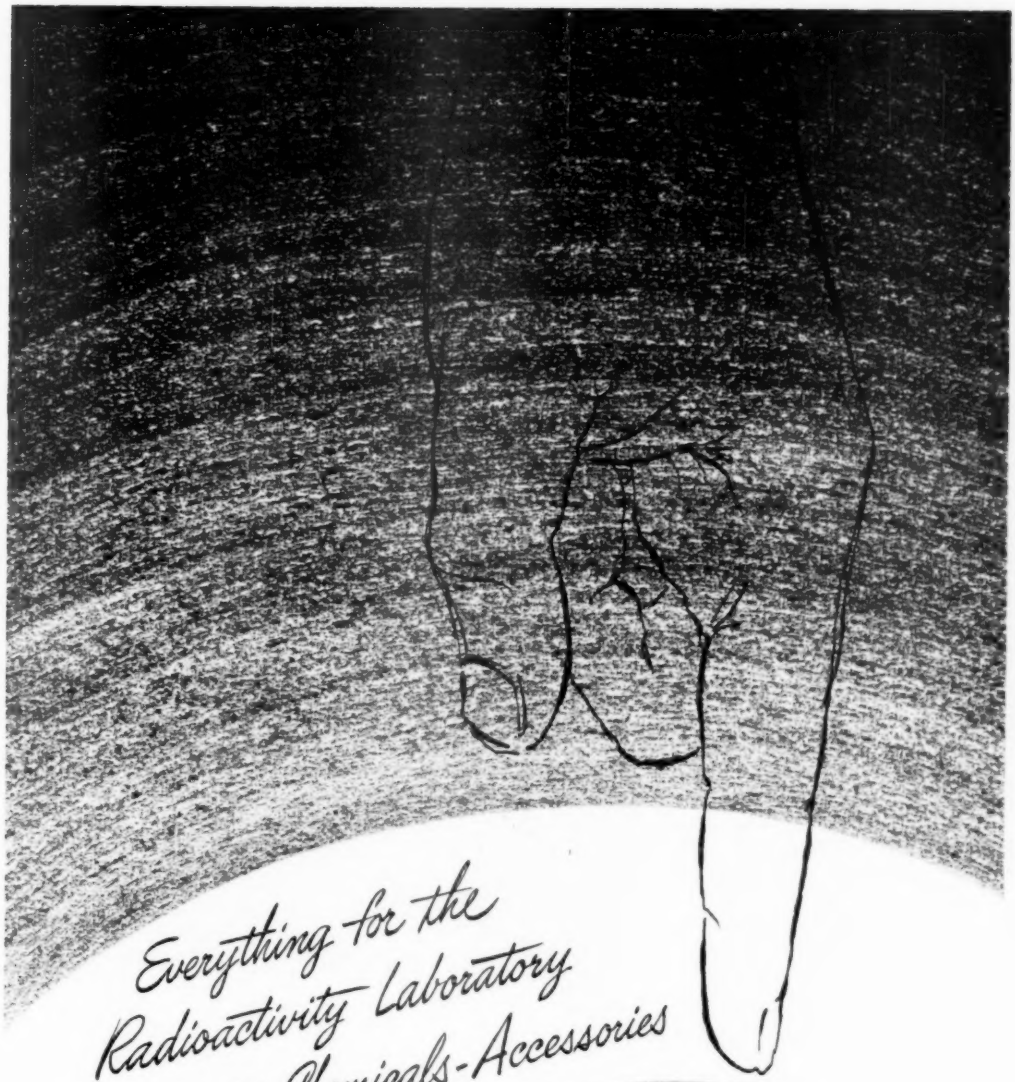

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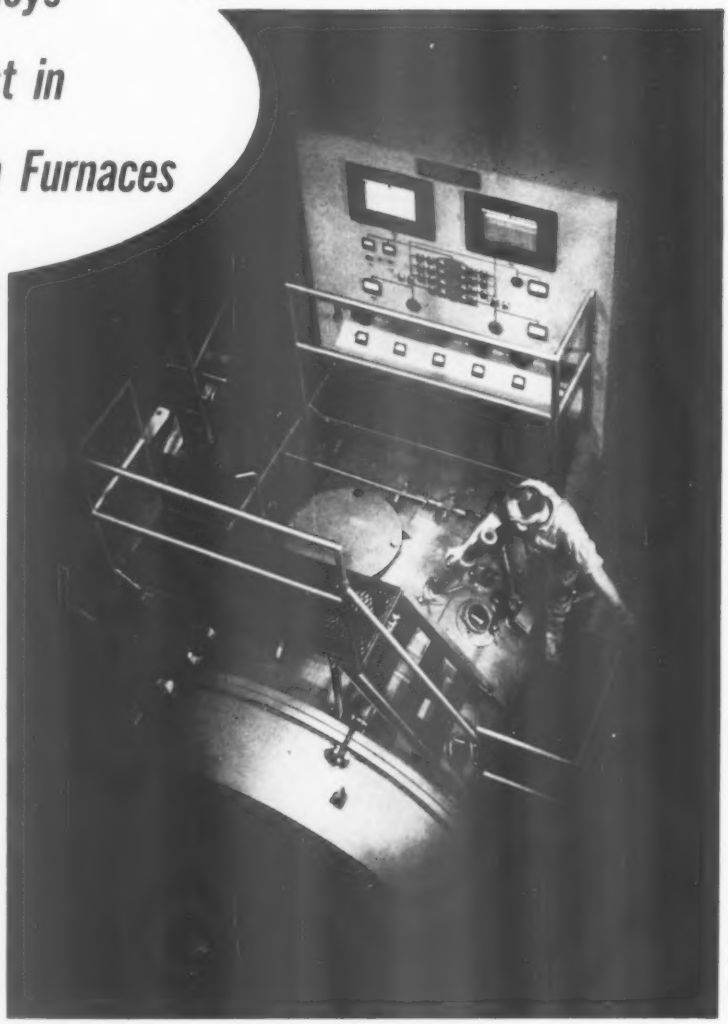

A Stokes high-vacuum melting furnace of 1000-pound capacity at Utica Drop Forge & Tool Corporation, Utica, N. Y. The furnace is to be used for the melting and casting of high-temperature alloys for jet engine rotor blades.

Vacuum furnace melting and casting is the economical method for producing many new metals, with greatly improved properties. Alloys that can stand up in rocket engine combustion chambers and advanced jet engine turbines, metals essential for the construction of nuclear reactors, still other high-purity metals with properties not previously attainable . . . these are just a few of the more than thirty new elements vacuum processing has added to the industrial spectrum.

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Moreover, vacuum processing of alloys conserves critical hardening elements, since there is minimum loss of these metals during melting. More usable metal is obtained from each melt, and virtually all of the scrap can be salvaged by vacuum melting.

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1	0-1200	0-20 Ma.	0.1%	10 Mv.
2	6.3 AC	10 Amp.	†	

MODEL 1020

OUTPUT	VOLTS	CURRENT	REGULATION	RIPPLE
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KEPCO Voltage Regulated Power Supplies are conservatively rated. The regulation specified for each unit is available under all line and load conditions within the range of the instrument.

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***REGULATION FOR BIAS SUPPLIES:** 10 millivolts for line 105-125 volts. ½% for load at 150 volts.

†All AC Voltages are unregulated.

VOLTS	CURRENT	REGULATION	RIPPLE	6.3 V.† AC. CT.	MODEL
0-1500	0-200 Ma.	0.5%	20 Mv.		1520
0-1200	0-20 Ma.	0.1%	10 Mv.	10 Amp.	1220
0-1000	0-500 Ma.	0.5%	20 Mv.		1350
200-1000	0-500 Ma.	0.5%	20 Mv.		1250
0-1000	0-50 Ma.	0.1%	10 Mv.	10 Amp.	1020
0-600	0-3 Amp.	0.5%	10 Mv.		780
0-600	0-2.25 Amp.	0.5%	10 Mv.		770
0-600	0-1.5 Amp.	0.5%	10 Mv.		760
0-600	0-750 Ma.	0.5%	10 Mv.		750
0-600 0-150 Bias	0-300 Ma. 0-5 Ma.	0.5% *	10 Mv. 5 Mv.	10 Amp.	615
0-600	0-300 Ma.	0.5%	10 Mv.	10 Amp.	500R
#1 0-600 #2 0-600	0-200 Ma. 0-200 Ma.	0.5% 0.5%	5 Mv. 5 Mv.	10 Amp. 10 Amp.	800
0-600 0-150 Bias	0-200 Ma. 0-5 Ma.	0.5% *	5 Mv. 5 Mv.	10 Amp.	815
#1 200-500 #2 200-500	0-200 Ma. 0-200 Ma.	0.5% 0.5%	5 Mv. 5 Mv.	6 Amp. 6 Amp.	510
200-500	0-200 Ma.	0.5%	5 Mv.	6 Amp.	245
0-400 0-400 0-150 Bias	0-150 Ma. 0-150 Ma. 0-5 Ma.	0.5% 0.5% *	5 Mv. 5 Mv. 5 Mv.	10 Amp. 10 Amp.	2400
0-400 0-150	0-150 Ma. 0-5 Ma.	0.5% *	5 Mv. 5 Mv.	10 Amp.	400
0-400	0-150 Ma.	0.5%	5 Mv.	10 Amp.	141
100-400	0-150 Ma.	0.01%	1 Mv.	10 Amp.	2000
0-350	0-3 Amp.	0.5%	10 Mv.		730
0-350	0-2.25 Amp.	0.5%	10 Mv.		720
0-350	0-1.5 Amp.	0.5%	10 Mv.		710
0-350	0-750 Ma.	0.5%	10 Mv.		700
100-325 0-150 Bias	0-150 Ma. 0-5 Ma.	0.5% *	5 Mv. 5 Mv.	10 Amp.	131
0-300 0-150 Bias	0-150 Ma. 0-5 Ma.	0.5% *	5 Mv. 5 Mv.	5 Amp.	315
0-150	0-50 Ma.	0.5%	5 Mv.		150
3-30	0-30 Amp.	0.5%	0.1%		3030
1-13	0-10 Amp.	0.5%	10 Mv.		3200

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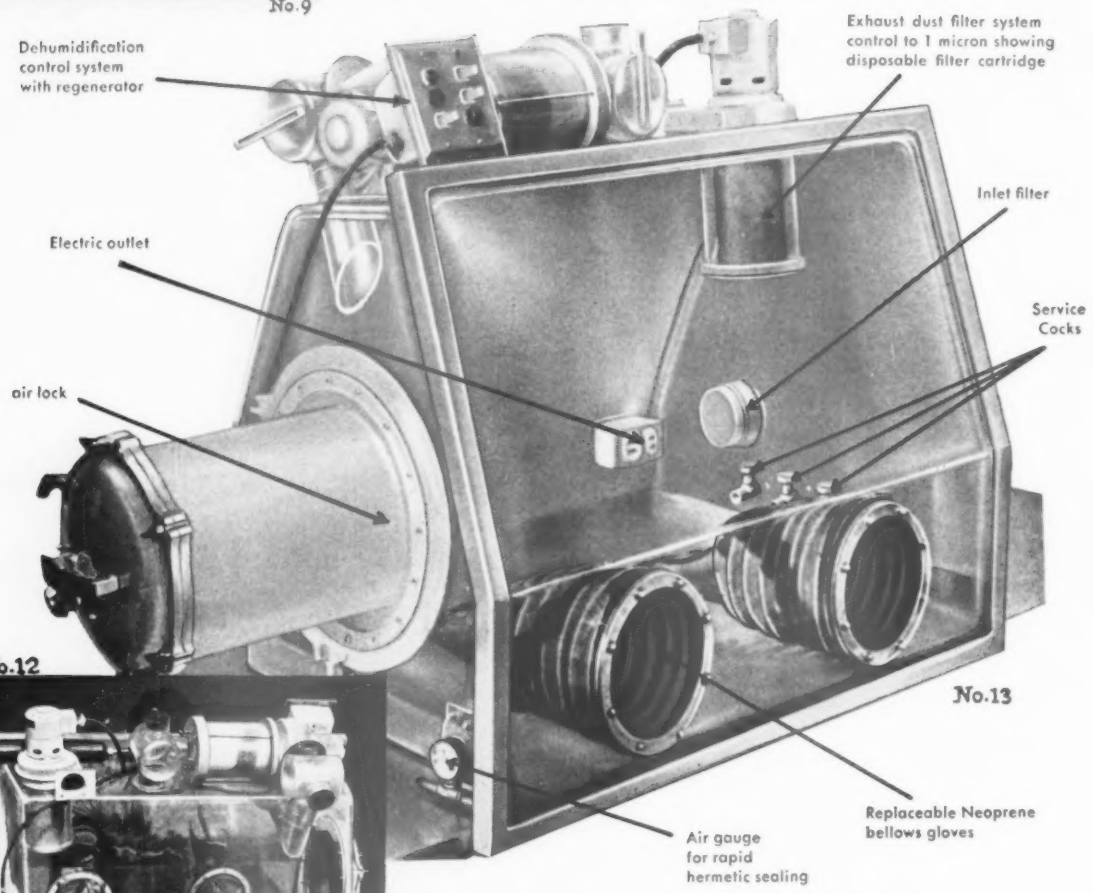
Dehumidification control system with regenerator
Exhaust dust filter system control to 1 micron showing disposable filter cartridge
Inlet filter
Electric outlet
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air lock
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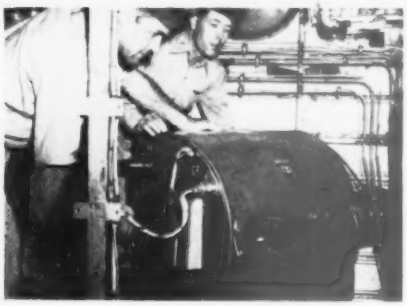
Solar "Mars" gas turbine proves reliability



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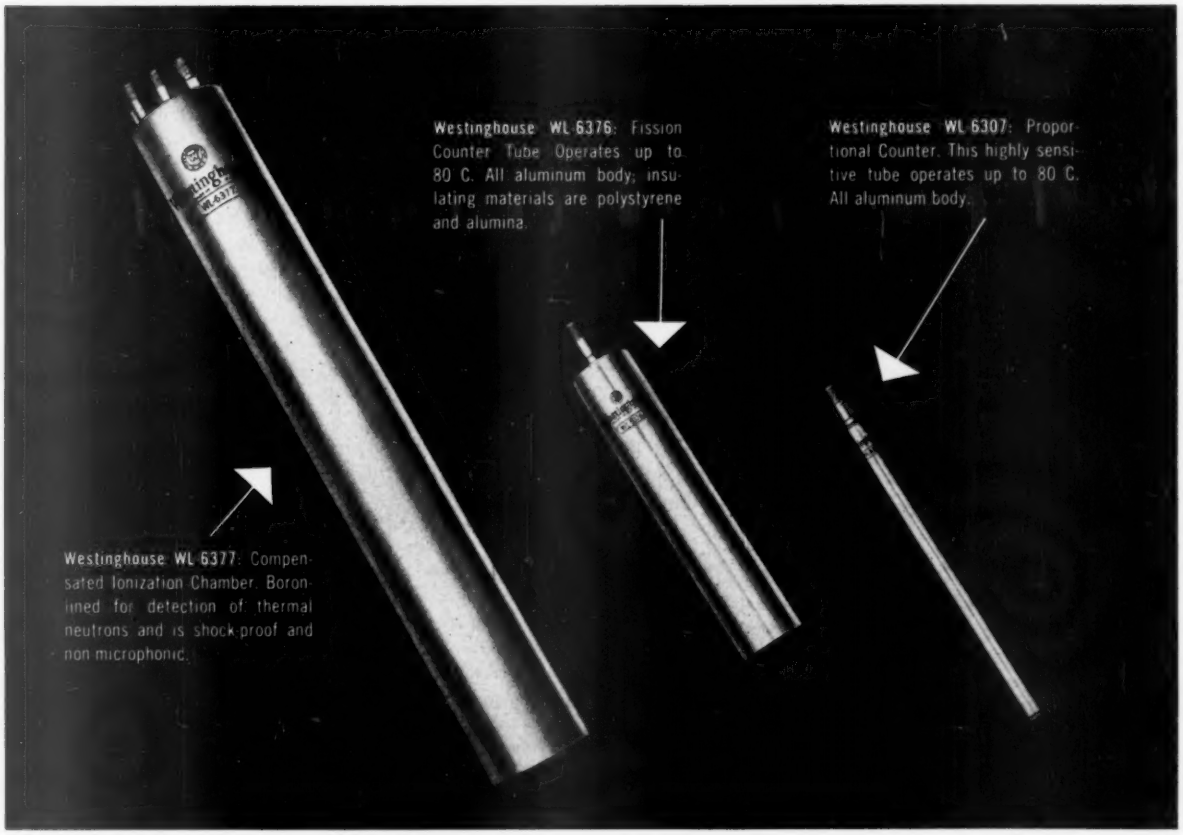
REACTOR CONTROL TUBES


Westinghouse WL-6376: Fission Counter Tube. Operates up to 80 C. All aluminum body; insulating materials are polystyrene and alumina.
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The Reader AUDITED PAID ABC CIRCULATION *His Mark*

THE ABC SYMBOL, which appears at the head of this page, is your brand—the reader's brand—on this magazine. It stands for Audit Bureau of Circulations. It means that this magazine will stay in business only so long as it continues to serve its readers to their satisfaction.

That Bureau—known for short as ABC—is a voluntary, nonprofit, cooperative association founded in 1914 by a group of publishers, advertisers and advertising agencies who wanted to establish and maintain higher standards of publishing practices than then prevailed. Its primary and specific purpose was to set up yardsticks to appraise circulation values and to verify the claims of publishers as to their circulations. For the buyer of advertising space this provides an effective means to take some of the guesswork out of buying and to reconcile the conflicting claims of competing publishers. BUSINESS WEEK magazine has aptly described ABC as "the publisher's conscience—and cop."

BUT IN DOING that job, ABC performs another function of high importance to the readers of ABC member publications. It provides a constant pressure on the publishers to keep alive in their staffs a sense of primary responsibility to their readers. That is because the most simple and direct method of making a publication responsible to its readers is to place upon it a purchase price, whether by subscription or newsstand purchase. The right to purchase or to refrain from purchasing a publication gives to the reader and to no one else the power to pass effective judgment on the publisher's success in serving the reading public. Each paid publication will grow or languish, will prosper or fail, in proportion as it wins or loses the following of thousands or millions of readers. The readers, by their patronage, record their judgments as to whether the publisher and his publication are measuring up to their responsibility to them.

And that is where the ABC comes into the reader's picture. The newspaper or magazine that carries the ABC symbol on its masthead must in the first place be a paid circulation publication. Moreover, it must conform to the high standards set up by the Bureau as to terms of payment and accounting methods. And again it must open all of its books to the auditors of the Bureau on demand.

SINCE THE INFORMATION thus determined by thorough and impartial audit is periodically made public through the ABC statements and audit reports, it is constantly available to and universally used by advertisers who are considering the purchase of space in an ABC publication. These reports show the circulation trend, as verified and certified by ABC, and thus put the advertisers in a position to know whether or not the publisher is rendering satisfactory service to his readers.

Thus the publisher who submits his publication to the supervision and discipline of ABC affirms in the strongest possible manner that he recognizes his primary obligation is to his readers and that he owes his standing to a voluntary demand by those readers. It follows that the editors of ABC publications must be exceptionally alert to the desires of their readers and responsive to their needs, since any decline in circulation will soon show up in the ABC statements and audit reports.

THAT IS WHY we describe the ABC symbol as the reader's brand. It shows that a publication must be primarily responsive to him and that he holds in his own hands its success or failure. And that ABC symbol is not only a constant reminder to him of that fact, but also an equally constant reminder to all concerned that the reader's willingness to pay for the ABC publication is the acid test of its value to him and to the advertiser.

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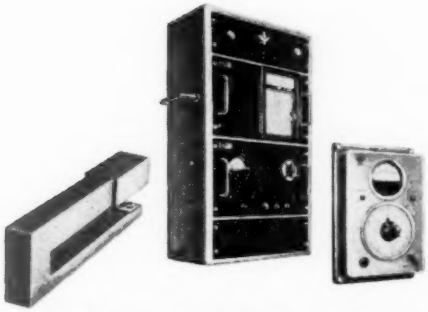

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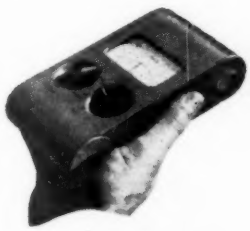
For continuous non-contact measurements of weight per unit area or thickness

For thickness measurement in the production of sheet or strip metal, plastics, rubber, paper, textiles, etc. It will also measure thickness of coatings or laminations. Basic principle is that of the absorption of beta rays emitted by radioactive isotopes. Accuracy is far greater, in most applications, than that attained by the production equipment. Errors, down time and waste of material running at high speeds are minimized. Radiation source is securely housed in interchangeable capsule, and meets all AEC regulations. Equipment operates on 110-220 volts, with only 70 watts consumption.



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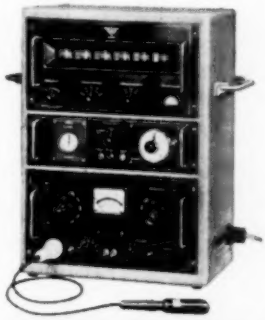
For measuring the intensity of gamma radiation and the detection of beta and alpha rays

This pocket-size instrument is factory-calibrated, using the gamma rays of radium. Two scales permit direct readings of millioroentgens per hour or of roentgens per hour. Accuracy is plus or minus 10% of full scale indicated deflection. Rotary shield cuts out beta rays while measuring gamma rays. Operates on a single 1.5 volt flashlight battery. Has many scientific, technical, prospecting and medical applications. Write for detailed data.



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For counting pulses and to measure the instantaneous value or the rate of change of pulse frequency

This meter-scaler can be used in conjunction with Geiger-Muller counter tubes, proportional counters, and scintillation counters. Predetermined count and time operation is possible for precision counting of electrical impulses.

Contained in compact cabinet 26 x 19 x 10 inches, divided into exchangeable units. Write for detailed operation data.

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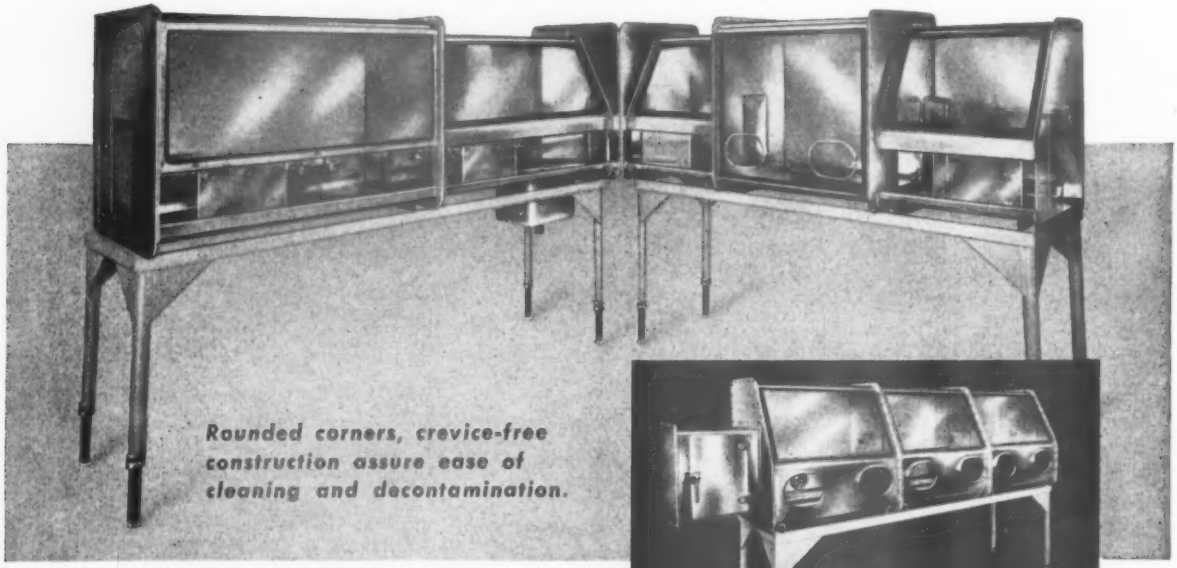
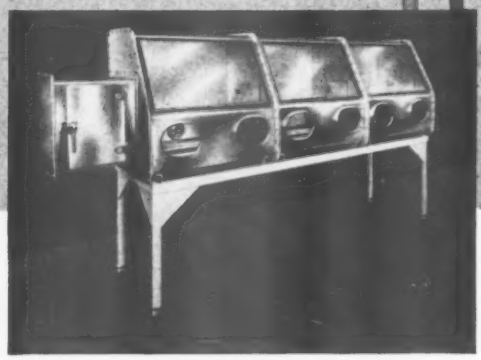
INTERCHANGEABLE DRY BOX SYSTEM
FOR HANDLING RADIOACTIVE MATERIALS





Some of the many assemblies possible with the interchangeable dry box system.

Here is a system of interchangeable dry boxes that offers several advantages:

- Offers selection of six basic enclosures and variations, 2 types of air locks.
- Completely flexible. Endless arrangements are possible to meet any condition.
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	STAINLESS STEEL SINK UNITS	

LATE NEWS and COMMENTARY

Revamped Commission

With the Atomic Energy Commission entering an important new phase of its life (a major regulatory function has been added to its manufacturing and research duties), observers are trying to analyze the meaning of the two new appointments to the AEC—Drs. John von Neumann and W. F. Libby. Because AEC now has the important task of encouraging industrial development of atomic energy, it was thought one of the new commissioners would be an industrialist. Instead, AEC now has two scientific members for the first time. (Previously, Robert Bacher and H. D. Smyth were AEC's lone "scientific members.")

Both von Neumann and Libby have world reputations as outstanding scientists. Both were members of the very influential AEC General Advisory Committee until named to their new posts. AEC always depended very heavily upon the GAC for scientific guidance. It seems likely that this will be changed under the new AEC.

The two new commissioners can also be expected to take a personal interest in classification matters. Libby, with his strong background in gaseous diffusion separation work, was a member of AEC's Senior Responsible Reviewers committee, the group concerned with top-level classification recommendations.

Von Neumann is on record (in 1946 before the McMahon committee) on secrecy: "There must be . . . absolutely no secrecy or possibility of classification of the results of fundamental research . . . For instance, to make work on the heavy nuclei—uranium, thorium, etc.—a preserve for special rules or secrecy would be vain since the reactions of light nuclei might later assume an even greater importance . . . There may still be other sources of primary energy . . . yet to be discovered . . . It is probable that lighter elements will give more important results in the coming years."

He also feels that there should be as free interchange of information with scientists abroad as within the U. S.

In 1946, von Neumann felt AEC should be a political body with the Cabinet directly represented on it. He said, "I think the Cabinet should have control of the Commission."

He was most recently in the news because of his testimony in defense of Dr. J. R. Oppenheimer. Although he disagreed with Oppenheimer's position on the H-bomb program, von Neumann said he had "no doubts" about his loyalty.

•

GAC Appointees

Three newly appointed members of AEC's General Advisory Committee are: Edwin McMillan, University of California Nobel prize winner; Warren C. Johnson, University of Chicago, chairman of AEC's Senior Responsible Reviewers; and Jesse W. Beams, University of Virginia.

•

More Study Teams

Acceleration of industrial interest in atomic energy is becoming more apparent in Washington. AEC officials report applications to set up study groups are now coming in at the rate of about one a week. Very few are turned down.

Study teams 16 and 17 were announced in late October. Number 16 is: Rocky Mountain Nuclear Power Study Group—Arizona Public Service Co., Phoenix; Ebasco Services, Inc., N. Y.; Fluor Corp., Los Angeles; Idaho Power Co., Boise; Minnesota Mining and Mfg. Co., St. Paul; Phillips Petroleum Co., Bartlesville, Okla.; Public Service Co. of Colorado, Denver; Riley Stoker Co., Worcester, Mass.; Utah Power and Light Co., Salt Lake City. The nine companies will contribute $5,000 each and a total of ten men. They will first study a dual-purpose, light-water cooled and moderated reactor.

Team No. 17 is Bethlehem Steel Co.'s Shipbuilding Division, which will study reactor types, steam cycles, control methods, machinery arrangements, and

weight as related to nuclear power for commercial ship propulsion. The company will also look at package reactors for power and for distilling sea water.

It's expected that Dow Chemical Co. will form another study team. Dow recently split away from the Detroit Edison group.

•

Navy Award Richard A. Baus, Naval Research Laboratory chemist, has been presented a meritorious civilian service award, second highest award for Navy employees, for developing and applying "analytical procedures and techniques for the complete radiochemical analysis of certain irradiated stainless steel samples of both high and low specific activity." Navy said his work, which provided the service's nuclear reactor program with valuable information on habitability of nuclear-powered submarines, was so tied in with security matters that details of his accomplishments were not revealed.

•

Uranium Supplies The Atomic Energy Commission reports that mining of uranium is far exceeding the capacity of mills to process the ore. (See p. 118 for comments on related feed-materials program.) Carroll Wilson, former AEC general manager, now vice president of Metals and Controls Corp., told a National Industrial Conference Board meeting: "Unless there is a change in government policy, a bottleneck of serious national importance can develop . . . Incentive is needed . . . a schedule of published prices for concentrate, firm until 1962 . . . Removing the mantle of secrecy from the price of uranium concentrate is also needed in appraising the economics of power reactors."

The Climax Uranium Co. announced that it has signed a new five-year contract with AEC to double the capacity of its uranium mill at Grand Junction, Colo.

•

Foreign Business Gordon Dean, former chairman of AEC, has sounded a warning that unless American business and government wake up, foreign competitors will steal the march on the U. S. in the reactor business. He told a New England Council-Atomic Industrial Forum meeting that by unnecessary secrecy and red tape we may tie our hands in dealing with other nations. In addition to citing possible competition in sale of entire reactors, he said, "Several foreign countries have produced pure uranium metal and are thinking in terms of selling finished fuel elements rather than uranium ore."

Dean made this forecast: "There is no reason why the U. S. acting through American industrial concerns cannot build and sell from 50 to 100 research reactors, within two years, to the industrial concerns, government laboratories, and universities of foreign countries. There is no reason why scores of package power reactors could not be sold in fuel-short areas of the world in the same period of time. It would mean substantial business for the reactor designers, the fuel fabricators, the instrument industry, and for component manufacturers."

The London *Daily Telegraph* reports that the following countries "have already inquired about the prices of British reactors and other power station components: Sweden, Norway, Denmark, Belgium, France, Switzerland and the Netherlands."

•

AEC Staff Changes First staff appointments made necessary by the Atomic Energy Act of 1954 have been announced by AEC. Harold L. Price, who will also continue as deputy general counsel, was named special assistant to the general manager for licensing. He will assist and act for the general manager on matters pertaining to AEC's licensing responsibilities, including development of a plan of organization for administration of the licensing program.

Elbert B. Johnson, formerly chief, controller's investigative staff, was named acting director of the new Division of Inspection. The new division will gather information to show whether contractors, licensees, and officers and employees of AEC are complying with provisions of the law and with AEC rules.

HOT LABS

A HOT LAB is a place where specialized equipment is properly used so that large amounts of radioactivity can be handled safely and efficiently. By definition, hot labs are an essential of the nuclear industry. Handling reactor fuel slugs, separating fissionable materials, processing fission products and other radioisotopes—all of these operations depend on hot-lab techniques. And the experiments needed to develop new materials for reactors and irradiation facilities involve using the same techniques.

Activity levels of curies and on up are what set hot labs off from other radioactivity laboratories. But many of the methods and much of the equipment is both interesting and useful to most people working with radioactivity, albeit at lower levels.

This special report is devoted to the techniques and equipment used in hot labs. It is based on papers presented at an Atomic Energy Commission information meeting at Brookhaven National Laboratory, Upton, N. Y., May 26–28, 1954. This was the third meeting of a series devoted to this subject; the classified material presented at this meeting will be collected in the near future by Brookhaven in document BNL-302.

NUCLEONICS' special report in this issue contains 36 articles and covers design (p. 36), equipment (p. 50), and operation (p. 65) of a hot lab. General-purpose manipulators (p. 45) are set off from other remote equipment, and administrative problems (p. 89) are separated from details of how specific operations are carried out.

The editors could not have assembled this material without the able assistance and cooperation of L. G. Stang, Jr., head of BNL's Hot Lab, general chairman of the meeting from which this material was obtained.

A NUCLEONICS SPECIAL REPORT

HOT LABS

Design

◀ High-Radiation-Level Analytical Laboratory 36
E. J. FREDERICK

◀ Low-Radiation-Level Metallurgy Cell 38
A. R. LUMBERT

◀ Hot Cells for Radium Processing 40
H. E. FEIERSTEIN

◀ Hot Cell for Testing MTR-Irradiated Specimens 42
M. H. BARTZ and J. B. BURNHAM, Jr.

◀ Lab for Radiochemistry, Metallurgy Tests 44
R. W. FISHER and G. R. WINDERS

High-Radiation-Level Analytical Laboratory

By E. J. FREDERICK
Oak Ridge National Laboratory
Oak Ridge, Tennessee

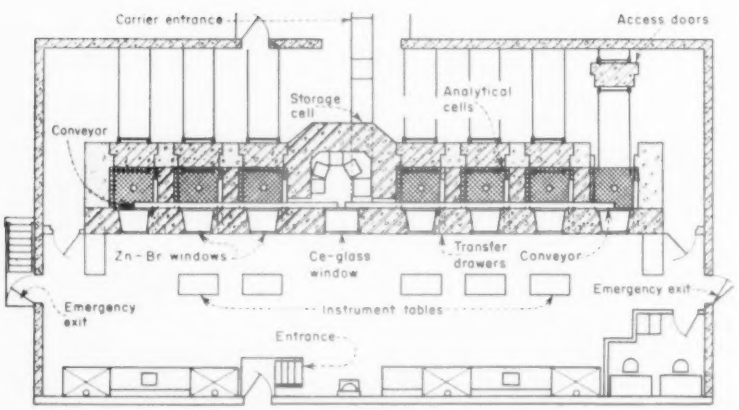


FIG. 1. Seven work cells and a 2,000-sample storage cell (center) are shielded by 3 ft of concrete. Window of storage cell is cerium-stabilized glass (3.27 gm/cm³); work-cell windows are filled with zinc bromide. Argonne Model-8 master-slave manipulators are used for all handling. Interior surfaces of all cells are painted with white Amercoat-33 and have a layer of strippable coat

CHEMICAL ANALYSES of all types of highly-radioactive samples will be made in the proposed centrally-located facilities of the analytical chemistry division at Oak Ridge National Laboratory. The new laboratory, planned as an annex to ORNL's hot-processing pilot plant, will be a $42 \times 84 \times 17.5$-ft concrete-block structure designed for versatility and operating economy.

Figure 1 shows the arrangement of the cells in the hot area (a decontamination pit, not shown, also will be located here) and normal lab facilities in the cold area.

The storage cell, Fig. 2, is $7.5 \times 6.75 \times 7.5$ ft and is shielded by barytes concrete 3 ft thick on all sides and 2.5 ft thick on top. Cerium-glass window is $3 \times 2 \times 3$ ft. A 6-in. viewing plug in the front shield is used to

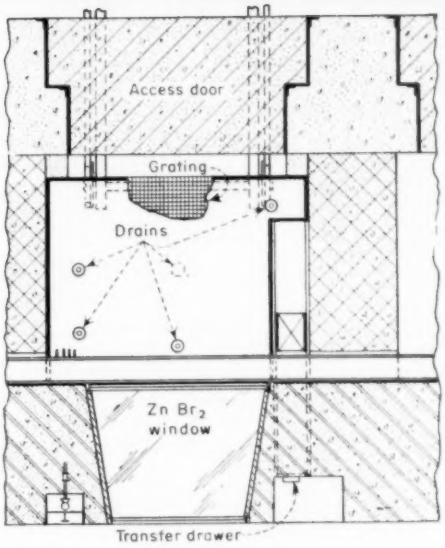
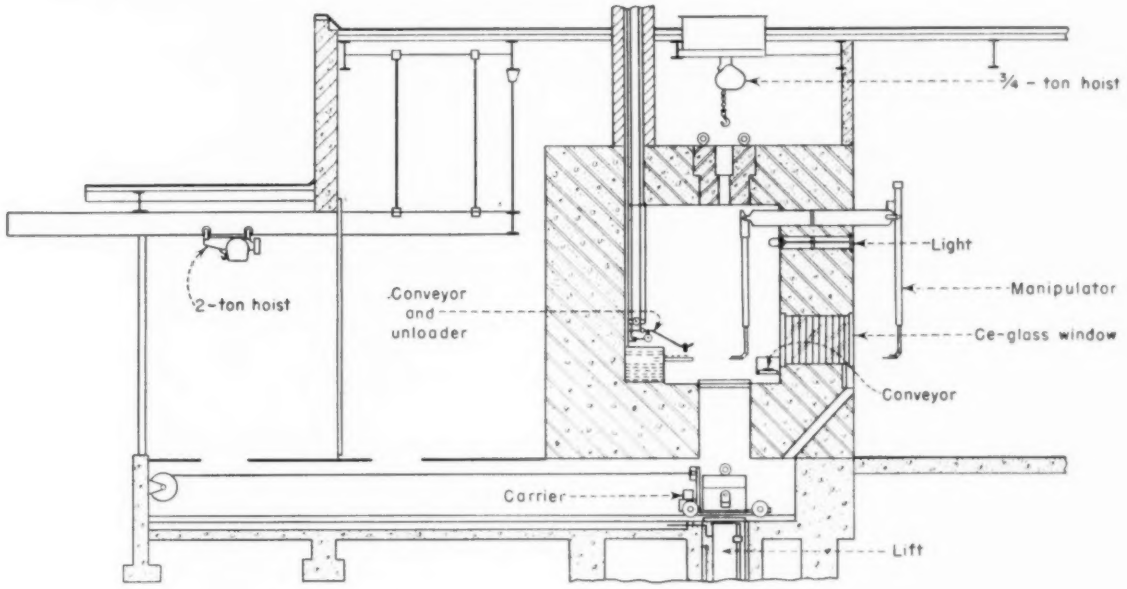


FIG. 2. (right) Work cells receive samples from other cells via horizontal conveyor traveling behind window. Electric, air, vacuum, hot off-gas, and process water outlets inside cell are controlled from face; duplicate outlets are on face. Except for floor drain (center) all drains are at grating level 40 in. above floor. Hot drains and salvage drain are on left, cold drain is at rear right

FIG. 3. (below) Storage cell, 7.5 × 6.75 × 7.5 ft, receives samples from hot pilot plant via shielded conveyor through cell roof; automatic pick-off puts samples into storage boxes. Shielded samples from other facilities are put on motorized underfloor cart by 2-ton hoist (left); cart moves over hydraulic lift, which raises container into storage cell; ¾-ton hoist removes container lid and manipulator puts samples into storage tray



doublecheck alignment of cart and lift before raising sample container into cell. Cell is lighted by two fluorescent-type 400-watt mercury-vapor lamps mounted on removable wall plugs.

The four 20-in³ storage boxes are made of ¾-in. plywood. Each has five 100-sample capacity plywood trays dowel mounted on ball-bearing file-drawer slides.

Figure 3 shows one of the seven identical 6 × 5 × 11-ft work cells. It is shielded in front by 3 ft of barytes concrete up to the 6-ft level (to permit recessing services into shield); upper front and back sections are 3-ft-thick normal concrete. The cell's top is 2 ft of normal concrete. Sides are 3-ft-thick poured normal concrete to the 38-in. level and 2-ft stacked barytes concrete block to the ceiling. The 6-in.-wide concrete ledge on the cell's sides supports a welded-steel grating on which rests a plywood or stainless-steel work surface.

The 18,000-lb concrete-block access door is 3 ft thick, 6.5 ft high, and stepped from 5 to 4 ft in width. It is moved on rails by a ¾-in. reversible ratchet wrench.

Ventilating air enters the cell from the operating area via a 3-in. duct and is exhausted through a similar roof duct into a hot-off-gas header. When the access door is opened, an electrically-controlled damper opens in a larger roof duct to maintain a 100-ft³/min flow through the doorway.

Each cell is lighted by four 400-watt alternated-switched fluorescent-type mercury vapor lights and two incandescent maintenance lamps.

Materials are transferred between cells by a continuous conveyor. A transfer drawer, penetrating the shield to the right of each work-cell window, is used to move small pieces of equipment in and out of the cell. The drawer, which moves on a standard conveyor roller through an 8 × 10-in. opening, is an 8-in. channel filled with 8 in. of barytes concrete.

A 12 × 15-in. service chase runs along the lower face of the work cells; it holds small electronic control instruments that would otherwise be mounted on the cell face. Additional electrical service outlets can supply power to cells or to the instrument tables through conduits beneath the floor. Twenty-two access plugs are located in the chase at each cell; half are above, and half below the grating.

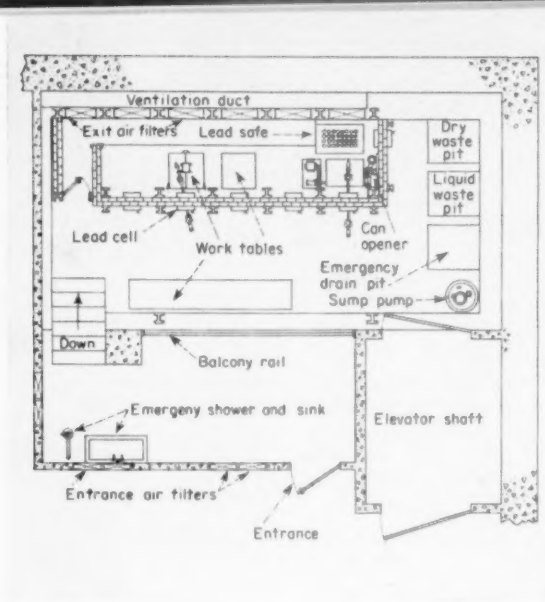


FIG. 1. Laboratory consists of a room 20 × 24 ft. Entrance is onto balcony about 4 ft above cell floor. Outlets for compressed air and other utilities are on balcony wall; 2-in. pipes under floor take services into each bay of cell. Fifty-gallon steel drums in interconnecting pits (right) contain hot wastes for monitoring before outside disposal. Emergency shower and sink on balcony drain into emergency pit. A 1-ton overhead crane serves entire cell area. Ventilating air enters through spun-glass filters, goes across room, passes through louvered door of cell, travels length of cell, and goes out through filtered duct at rear. Air flow maintains relative negative pressure in cell to prevent hot particles from reaching control area

FIG. 2. Hot cell, with five bays and a doorway (not shown), has walls consisting of carefully molded and machined (to ±0.003 in.) 3 × 3 × 6-in. lead brick courses laid in two contacting layers offset vertically and horizontally to protect against a 10-c source emitting 2.5-Mev γ's. Steel framework 18 × 5 × 8 ft supports cell's 3-in. lead roof sections, which are angle-iron edged and weigh 1 ton each. There are two interlocking roof sections on each bay. Wall of each bay and end of cell contain periscope viewer and ball assembly for handler. Control wires or hoses run through 1-in. pipes that go under lead wall. Intercom system, used when workers are inside cell, also provides hearing sense to person using handlers or controls

Low-Radiation-Level Metallurgy Cell

By A. R. LUMBERT*
Massachusetts Institute of Technology
Cambridge, Massachusetts

RADIOACTIVE METALLURGICAL specimens are removed from shipping cans, sorted, and subjected to physical and mechanical tests in an economical hot cell at the Massachusetts Institute of Technology. The set-up is described here.

Figure 1 shows the laboratory floor plan. Its walls are cement to a height of about 5 ft and mortared stone or cinder blocks to the ceiling. The ceiling of cement and steel beams forms the floor of building's receiving platform above. The laboratory floor is of reinforced concrete and steel beams resting on six caissons of 3-ft diameter with their 6-ft footings resting in sand. Exterior of the cell is shown in Fig. 2.

The ball-type handler in Fig. 3 was chosen for two reasons: 1, the roof over the cell makes it necessary to use a "through-the-wall" handler; 2, our basic philosophy was that we could use a sensitive and versatile handler for most operations, and regular routine operations could be accomplished by mechanisms inside the cell.

The unit fits anyplace in the cell wall. It has seven basic motions. These are in the x, y, and z planes and a rotary movement of the rod, which can be compared to the arm action; motion in the x and y plane of the tongs, which can be compared to wrist action; and the finger action made by opening and closing the tongs. Horizontal and vertical action is through ball motion.

The handler's wrist action is accomplished by use of universal gimbal joints at both tong and handle ends. They are connected by adjustable $^1/_{16}$-in. aircraft cables passing through the hollow stainless-steel rod much as strings on a puppet. Thus the tongs can follow the handle in the x and z motion. The one objectionable feature of this device is the reversal of pivot points between handle and tongs. The mental block is overcome with about the same ease as using a mirror.

The periscope-type viewer shown in cross section in Fig. 4 is an inexpensive completely portable unit that fulfills shielding requirements and serves the purposes reasonably well. A glass or zinc-bromide window was desired, but its application proved to be abnormal when designed to provide the required shielding. Also, its use would require the added expense of monochromatic lighting.

The can opener whose cutter is shown in Fig. 5 consists of a very inexpensive screw-cutting lathe, universal fast-acting three-jaw chuck, clutch, gear shift, motor, and standard pipe cutter. The can to be opened is held in the chuck, which can be opened or closed by a clutch enveloping the chuck's outer or movable spiral plate. When this plate is held, the chuck opens or closes (depending on the direc-

* PRESENT ADDRESS: Nuclear Metals Inc., 155 Mass. Ave., Cambridge, Mass.

MIT cell has "through-the-wall" handlers, periscope viewers, can opener . . .

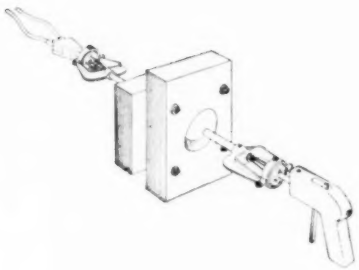


FIG. 3. Ball-type handler consists of tube through a ball mounted in two cast lead forms. For sensitivity, force at trigger has 1:1 ratio with that at interchangeable tongs. Ball is 9-in. hollow cast-iron lead-filled sphere drilled on diameter and bushed with an oilite bearing; hole is reamed to sliding fit with rod. Ball is supported in lead form with concave surface whose curvature is that of ball radius plus diameter of $\frac{1}{8}$-in. ball bearings

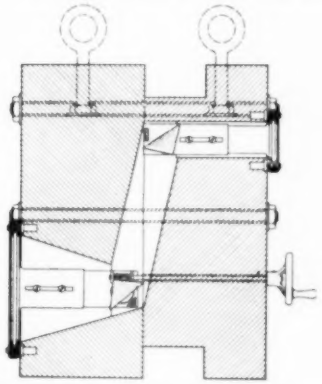


FIG. 4. Periscope's optical system consists of ocular unit and objective unit. Ocular unit, consisting of window and fixed prism on a steel frame, is attached to inserts in lead block. Cork bonded to both sides of safety-glass window provides seal. Objective unit is made in similar manner but is adjustable. Also a 10 × 36-in. mirror on the back cell wall is turned by a d-c motor through 90 deg to provide 180-deg view of entire cell interior

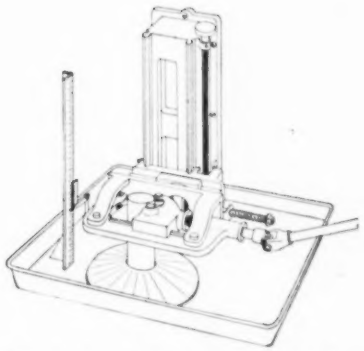


FIG. 5. Low-cost cutter opens 6-in.-long by $\frac{1}{2}$–2-in.-diameter shipping cans containing samples for study. Standard pipe cutter (mounted on cross carriage of head-down vertically mounted screw-cutting lathe attached to cell wall) is placed in position along can, which is held in a chuck. The pipecutter is closed on the can, the can rotates and is cut open. Opener has electrical and mechanical stops to limit its motions

. . . Storage safe, and two types of vertically adjustable work tables.

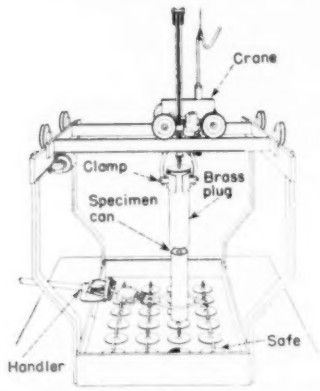


FIG. 6. Microswitch-limited crane places specimens in shielded safe so that personnel can work in cell between experiments. Crane lifts lead-filled 10-in.-long brass plug on which is hung a $1\frac{3}{4}$-in.-diameter can for specimen. Cam-operated clamp prevents plug from swinging. Safe is a 9-in.-lead-shielded 15 × 27 × 30-in. concrete box with 2-in. vertical storage pipes

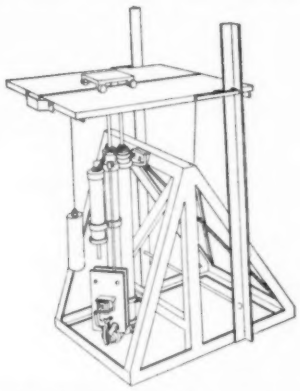


FIG. 7. Pneumatic-hydraulic lift table is supported by two hydraulic check cylinder piston rods and is guided by ball-bearing rollers on one side. Bellows air motor provides power via electrically controlled air valves. Electric solenoid for stop check on cylinder is only modification. Unit works well with light loads, but vibrates with heavy off-center loads

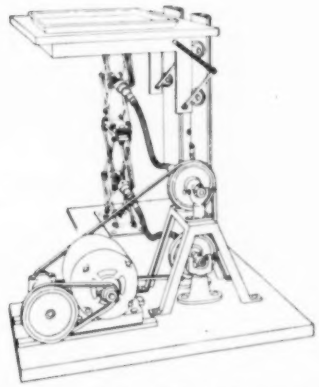


FIG. 8. Toggle-jack lift table moves up (for working), down (for handler access to safe) of position and is guided by ball bearings on one side. Mechanism consists of two toggle- or scissors-type auto jacks, two flexible cables, motor, and synchronized speed reducer. Cost of this table was about 25% of pneumatic-hydraulic table

tion that the motor reversing switch causes the lathe spindle to turn). The chuck is bolted to the lathe spindle to prevent it from unscrewing, and a steel ring positioned around the chuck prevents its jaws from opening too far.

The pipe cutter is free to slide on the cross carriage and a spring helps it clear the can while the vertical position is attained. A reversing switch on the motor permits cross carriage to move up or down with the lathe screw and shift gear in one position; the carriage stops when the shift is put in neutral.

This upset-cutting-action device was chosen over a tool-bit shear-cutting action because it forms much fewer chips to contaminate the area. The reversing switch is outside the cell, and shafts to the pipe cutter, clutch, and lathe screw shift gear extend through the wall. The can opener is mounted permanently at the end of the cell.

Operation of the crane and safe is shown in Fig. 6. Figures 7 and 8 show two types of vertically adjustable tables used in the hot cell.

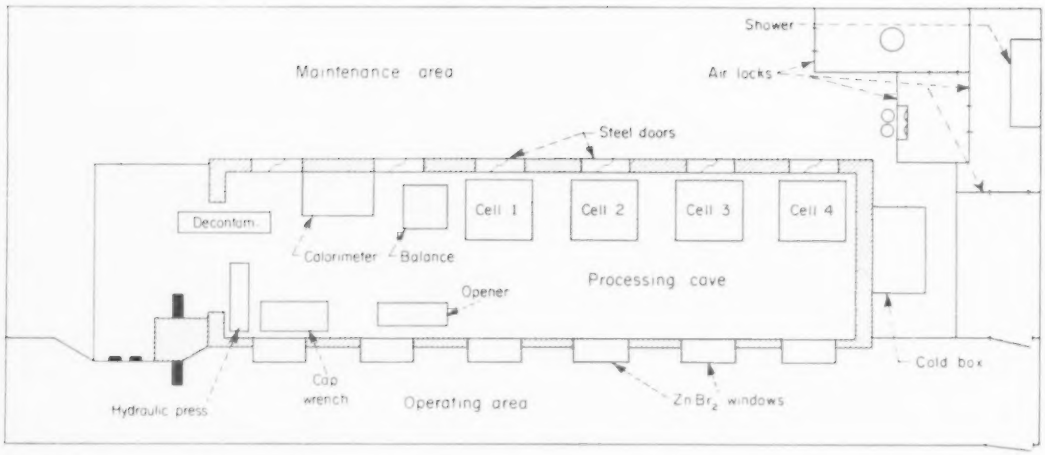


FIG. 1. Separation process is controlled from operating area; repairs are made by pulling unit into maintenance area. When entering high-risk area, personnel wear plastic suit-and-hood units (air comes to suit by hose from breathing-air supply). Rectilinear manipulator (shown on p. 35) is used to perform operations inside cave. Cells can be removed by remote control

Hot Cells for Radium Processing

By H. E. FEIERSTEIN
*Mound Laboratory**
Miamisburg, Ohio

GRAM QUANTITIES of irradiated Ra^{226} are separated from other irradiated products in Lucite-contained cells installed in a cave structure at Mound Laboratory. This article describes the layout, process flow, and special equipment used to protect operating and maintenance personnel from gamma radiation and radioactive gaseous daughter products.

The process of separating actinium-227, thorium-228, and lead-210 from the radium-226 after irradiation involves a series of steps. A cask is brought into the cave shown in Fig. 1; an aluminum can containing the radium in a platinum crucible is removed from the cask and the can's top is cut off by the opener. Then the crucible is placed in the dissolver cell shown in Fig. 2 and the radioactive salts are dissolved from the crucible. The salt solution is pumped to a second cell (Fig. 3). Here radium is separated by "salting out" in 70% nitric acid (gravimetric analyses of Ra^{226} yield showed 97% recovery); radon evolved is drawn into refrigerated carbon traps and allowed to decay. The purified $Ra(NO_3)_2$ is converted to $RaCO_3$ and is filtered into a Pt crucible and dried; crucible is placed in an Al can and a pressure-seal disk is forced into place by a hydraulic press. A screw cap with a lead washer is tightened in the can to make an airtight seal. Then the can is weighed, calorimetered, decontaminated, and checked for leaks. It is passed through a chute to the operating area where it is placed in a shielded container.

If equipment in the cell breaks or mechanical failure occurs during the process, the solution is pumped to another cell or it flows to the bottom of the slightly-tilted cell and is drawn off into a collection bottle. The cell is rinsed and supply lines are disconnected by the manipulator. The crane lifts cell (by hook on top) onto shielded cart in the maintenance area. The faulty equipment is repaired by hand by a person working behind the shield shown with a cell in Fig. 4.

Solutions are transferred within and between the cells through Carlon-C polyethylene tubes by gravity feed, air pressure, or vacuum. The flow is controlled by special polyethylene valves (Fig. 5) operated by the manipulator. The cells have no pinch clamps, glass or Tygon (vinyl compound) tubing, balljoints, stopcocks, or peristaltic pumps. Glass lines break too frequently; Tygon tubing is hardened and embrittled by some reagents used; glass balljoints are difficult to make tight; stopcocks freeze during repeated intervals of inactivity; and peristaltic pumps cause tubing to crack or build up extreme pressures and plug when precipitates are passed through.

Figure 6 shows some of the equipment used to perform process and repair operations by remote control.

A commercial Hansen disconnect is used on the air and water lines; a polyethylene disconnect is used on solution and vacuum lines; and electrical disconnects are used also.

The polyethylene disconnect consists of a tapered head and body of polyethylene, which are held together with a tempered metal bracket. The body is attached permanently to the cell's outer wall and the tapered head is fastened to the service line or the transfer line from the other cell, thus making it possible to disconnect the cell and remove it for repairs.

The electrical disconnects have the female unit permanently fastened to the cell and the male lead connected to an electrical distribution panel in the operating area. This distribution panel controls the motors for the cell doors, fans, and all auxiliary electrical equipment in the cells and cave.

Special techniques. Of the many special procedures used in fabricating equipment, several might be important in future work. These include tech-

* Operated by Monsanto Chemical Co. for the U. S. Atomic Energy Commission.

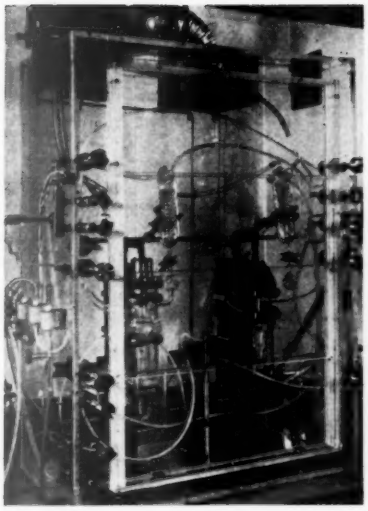


FIG. 2. Dissolver cell is used to dissolve radioactive salts from platinum crucible in which they have been shipped. Lucite door on front is opened by motor and pulley arrangement so that manipulator can work inside

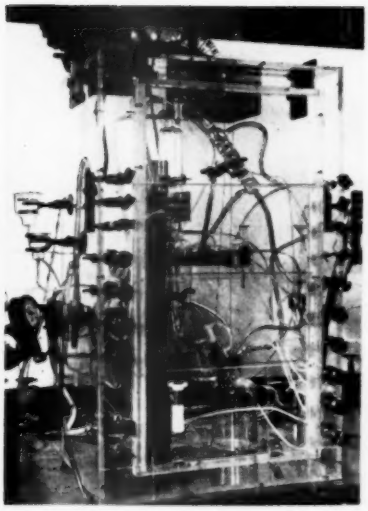


FIG. 3. Radium cell receives salt solution from dissolver cell and separates radium by "salting out" in 70% nitric acid. Filter and exhaust fan on each cell prevent spread of contamination through cave

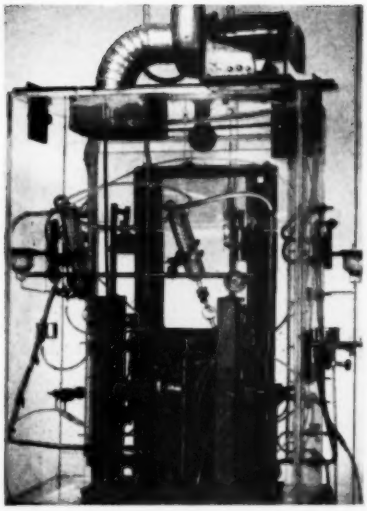


FIG. 4. Lead shield and lead-glass window mounted on cart in maintenance area are used to protect personnel when repairing cells by hand. If cell is too hot for repair by hand, it is placed in a box, covered with concrete and buried

niques for fabricating polyethylene tubes and using sintered glass filters.

A small hot-air blower was used to heat polyethylene so that it could be bent to shape or fastened to glass or metal connections. Pieces of tubing were sealed together by applying heat to the two portions. Such seals withstood 30-lb air pressure and 29-in. vacuum. However, such heat-sealed connections should be installed at least 2 in. from any concentrated heat source. To fasten polyethylene tubing and polyethylene valve bodies, the two pieces were immersed in a solution of warm chlorobenzene until the tubing changed from translucent to clear. The pieces were held together while a stream of air cooled the joint.

Sintered-glass filters of the same porosity and grade vary considerably in micron size and filtration rate. Thus, each filter must be washed and pretested.

To hold solutions and carry out precipitations above sintered-glass filters, air pressure controlled by a manipulator-operated valve is applied to the bottom of the filter. When the solution is to be passed through the filter, the air is shut off and the solution drawn through by vacuum.

* * *

Appreciation is expressed for the helpful suggestions of A. W. Martin, L. L. Bentz, E. L. Murphy, W. C. Darr, M. L. Salutsky, and F. C. Mead, Jr.

FIG. 5. Valve for control of solution flow consists of polyethylene body, Teflon diaphragm, stainless-steel swivel, nut, head, and handle. Solution enters port in body's center and leaves through side port. Stainless-steel Hoke valves control vacuum; similar valves of brass control air and water. All have special heads for operation by manipulator

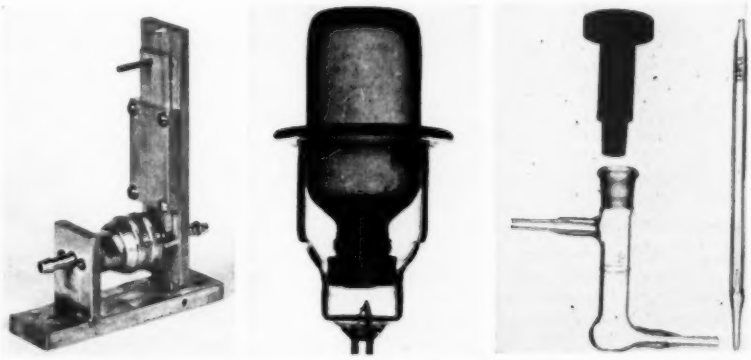


FIG. 6. Hansen disconnect, with manipulator adaptor, (left) is used in some lines. Reagent is added to cells by polyethylene bottle (center) whose cap is punctured by tapered protrusion of container on cell. Dipped-bottom sampler (right) between two valves in process line holds small amount of solution collected during transfer between vessels. Self-filling pipette removes sample for assay

FIG. 1. MTR hot lab (left) adjoins reactor services building (center) and reactor building (right). Plug storage facility is between hot lab and service building

Hot Cell for Testing MTR-Irradiated Specimens

By M. H. BARTZ and
J. B. BURNHAM, Jr.
Atomic Energy Division
Phillips Petroleum Company
Idaho Falls, Idaho

To PROVIDE facilities for disassembling irradiated plugs and capsules, testing irradiated samples, preparing specimens for shipment to other laboratories, and for machining irradiated solids, the hot cell described here was built near the Materials Testing Reactor (Fig. 1). Since no single operation is expected to warrant permanent installation of particular equipment,

MTR cell can handle 10–20-kc 1.5–3-Mev γ emitters, . . .

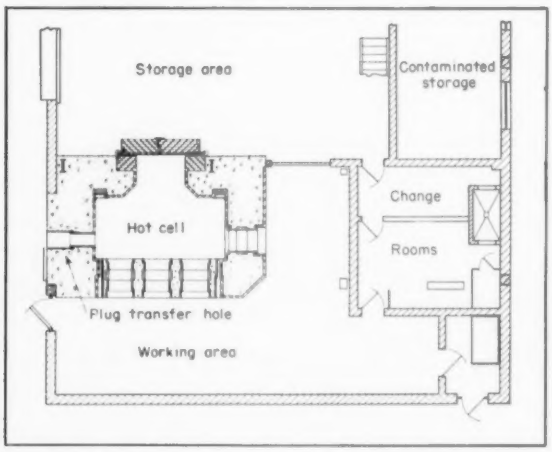


FIG. 2. Hot-lab building, 50 × 50 × 21 ft, made of pumice block, houses hot cell and change-room-connected storage and working areas. Isolation wall between areas is airtight. Other personnel doors and 6 × 9-ft truck door are closed during cell use. Light-storage area (150 lb/ft^2), 17 × 17 × 10 ft, above change rooms is reached by steel stairway. Building's floor, a reinforced-concrete slab independent of building and cell foundations, will support 2,400 lb/ft^2. Blowers above entrance force 4,500 ft^3/min air into building and maintain 0.05-in. (water) higher pressure in working area than in storage area. A 10-ton bridge crane moves heavy equipment within storage area

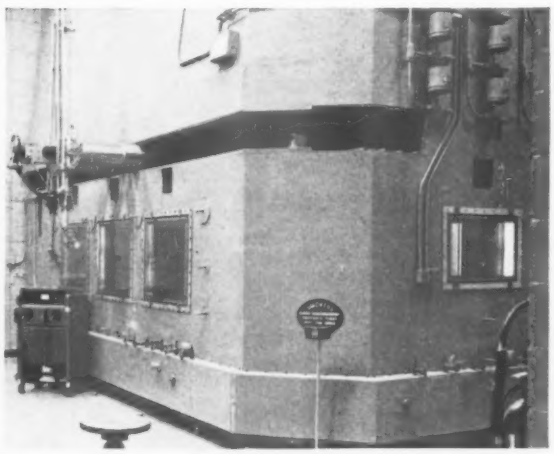


FIG. 3. Cell, whose interior (excluding entrance area) is 14 × 6.5 × 13.3 ft, has barytes concrete (ρ = 3.2) walls 4 ft thick; ceiling is 2.5 ft thick. Interior is lined with ¼-in. carbon steel covered with Amercoat, industrial adhesive tape, and strippable paint. Removable plugs on cell face are adapted to carry electric, water, air, and gas lines into cell. Outlets on face deliver gas, water, 110-, 220-, and 440-volt electricity and plant and instrument air. Cell's door opening is 6 × 7 ft and is closed with 18-in.-thick overhead-supported sliding steel doors. Shielded containers and heavy equipment can be moved in or out with a fork-lift truck or on rollered dollies

the cell is designed for flexible adaptation to a variety of operations.

As shown in Fig. 2, the cell building is divided into two general parts—a working area, and a storage area. Heavy equipment or shielded containers can be taken into the cell through the cell door. Experiments removed from the reactor's HB, HT, or HG holes (NU, April '54, p. 20) into a universal coffin can be wheeled to the transfer hole on the cell's outside wall. After removing appropriate shield plug from the transfer hole, the specimen and plug from the coffin are pushed into the cell in such a way that the coffin's plug acts as the shield plug in the cell's transfer hole.

The working face of the hot cell is shown in Fig. 3. Sodium-vapor lamps inside the windows and incandescent lamps in the cell ceiling illuminate the cell interior. A typical viewing window is shown in Fig. 4. Figure 5 shows the manipulators used to handle work inside the cell.

Cell exhaust. Two exhaust systems remove contaminated air from the cell; one is used when nonvolatile nondusting materials are handled, the other is used with volatile and dusty specimens.

With the former type of materials, the cell air is exhausted through American Air Filter Corp. 25FG prefilters at the cell's rear corners and above the door; the air then goes through CWS (Chemical Warfare Service) filters, and exhaust fans blow it out a 25-ft stack on top of the building. The two 850-ft³/min exhaust fans are located over the cell in a room completely isolated from the building interior. When the cell is being used, one exhaust fan operates. When either door at the rear of the cell is opened, the second exhaust fan also operates to give an inward air velocity of 30—140 ft/min through the cell doors, depending on how far the doors are opened.

The second exhaust system is used when the cell is handling volatile and dusty radioactive materials. Hooded boxes or isolation boxes in the cell are connected to the exhaust outlet (on cell's outside wall) by a flexible hose. Exhaust air flows through a 25FG prefilter and a CWS filter to the reactor basement, where it passes through a caustic scrubber and is discharged through the reactor stack. The 25FG prefilters and the CWS filter used in this system can be removed using the manipulators.

Cost. The total cost of about $268,000 breaks down as follows: building and cell (less windows, crane, manipulators), $135,380; crane, $9,000; General Mills and Central Research maniplators, $63,400; telescoping shield, $13,000; window frames and gaskets, $4,920; nonbrowning and white glass, $3,450; high-density glass, $24,200; zinc bromide, $6,350; installation of windows, manipulators and crane, $2,000.

Test equipment. Although only work tables, a lathe, drill press, power hacksaw and dollies are now available for use in the cell, the following metallurgical test equipment soon will be supplied: vertical milling machine, chip-disposal unit, isolation boxes, microhardness tester, macrohardness tester, tensile machine, impact tester, balance for weight and density determination, equipment for measuring electrical resistivity, equipment for measuring thermal conductivity, cutoff wheel, mounting press, rough-polishing equipment, sample-washing machine, fine-polishing equipment, electrolytic etching equipment, acid-etching equipment, macrophotographic equipment, turntable, metallograph, micrometers, profilometers, annealing oven, and periscope.

. . . Has 4-ft-thick windows and two types of manipulators.

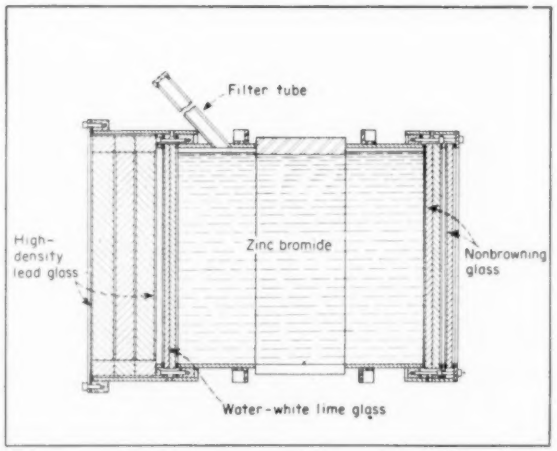


FIG. 4. From the outside surface (left), typical window consists of: a ¼-in. plate glass cover, three 2⅔-in. plates of high-density lead-glass (ρ = 6.0) (two 4-in. plates are used in small window), two 1-in. plates of water-white lime glass serving as outside cover of $ZnBr_2$ tank, 32 in. of zinc bromide solution, two 1-in. plates of nonbrowning glass serving as inside cover of tank, and a 1-in. plate of nonbrowning glass. A carbon-steel tank, used as frame for windows, also serves as $ZnBr_2$ container when heavily coated with Amercoat paint. Steel plate extending 1 in. down into middle of tank maintains shielding when the zinc-bromide solution contracts thermally

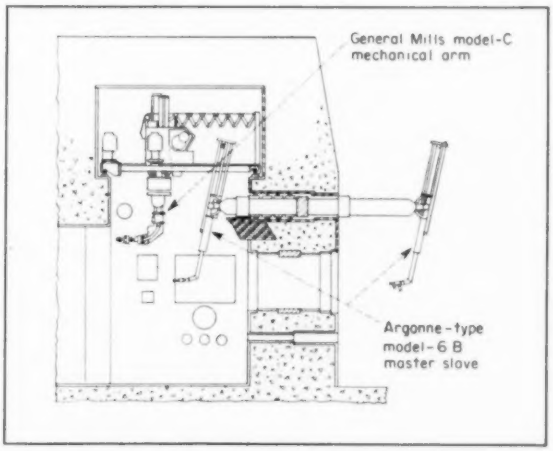


FIG. 5. Manipulation of equipment in cell is accomplished by mechanical arm, pair of master-slaves, and a 1,000-lb cantilever crane mounted in telescoping shield between master-slaves. Outlets on cell faces permit mechanical arm's control console (Fig. 3) to be positioned at any window. The General Mills Model-C7 mechanical arm travels on overhead rails so that it can be used anywhere in the cell. It is impossible to prevent the manipulators from interfering with one another. Although limit switches on the bridge of the mechanical arm and on the telescoping shield of the master-slaves help prevent jamming, alert operation is mandatory

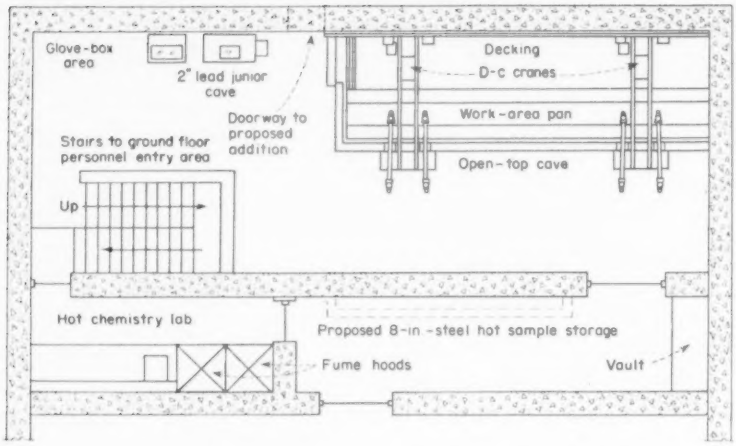


FIG. 1. Hot canyon, in a basement having 24-in. concrete walls and ceiling, has four areas: 1, low-activity-level chemistry laboratory (lower left), 8 × 21 ft; 2, equipment entry and hot-storage area (lower right), 8 × 34 ft; 3, hot canyon proper (top), which contains open-top cave, Berkeley-type junior caves, and glove boxes, 19 × 57 × 20 ft; 4, personnel contamination control area (not shown, upstairs), which includes change areas, showers, check point, and hot laundry

Lab for Radiochemistry, Metallurgy Tests

By R. W. FISHER
and G. R. WINDERS
Ames Laboratory
Iowa State College
Ames, Iowa

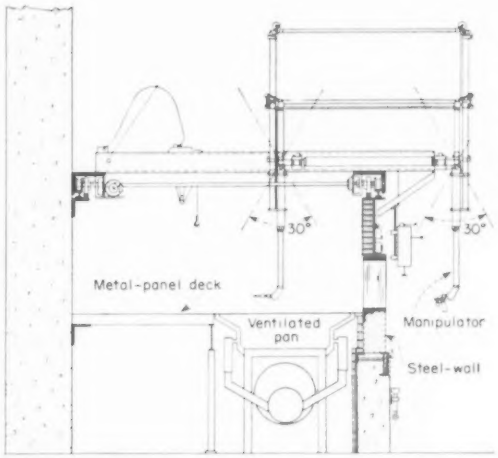


FIG. 2. Cave, 31 × 9 × 8 ft, is divided into four cells, each equipped with a Penberthy high-density (ρ = 6.2) lead-glass window 20 × 36 × 8 in. Cave's end[5] has 4 × 8-in. window and an 8-in. steel door that is manually rolled into place

FACILITIES DESCRIBED here are used for radiochemistry and metallurgy tests at Ames Laboratory. The hot cave shown at the upper right corner of Fig. 1 and in Fig. 2 is shielded by 8-in. hot-rolled steel plate supported on a 12-in. concrete wall 36 in. high. Both have 2-in. inner lining of lead bricks. The steel plate is capped by a 21-in.-flange beam with 4 in. thickness of lead brick inside the flange.

Stepped plugs in the wall provide entry for utility lines (special manipulator plugs also can be inserted in these ports). Plumbing utilities recessed in the 8-in. I-beam in the concrete below the steel plate include hot and cold water, air, vacuum, gas, and cold waste. The 4-in. recess in the upper beam's face houses a complete electrical supply for the cells.

The four cells in the open-top cave are serviced by two safety-interlocked 500-lb overhead cranes on which are mounted a pair of Argonne Model-4 master-slave manipulators. Each crane's bridge has a 2-in. steel umbrella-type shield to reduce scattering and secondary radiation from the frame.

The cave is equipped with a full-length watertight stainless-steel pan that serves as a combination work table and downdraft ventilation hood. The pan is 37 in. above the floor. All adjoining surfaces are pitched to drain into the pan. Removable Q-type floor panels between the pan and back wall support heavier equipment.

The canyon area is maintained at a lower pressure than the rest of the building by a special ventilating system that handles 11,000 ft³/min of air at low speed and 18,000 ft³/min at high speed. The air supply passes through a Farr Filter-American Air Filter Corp. Model D25FG combination and is introduced into the canyon through perforated ceiling pans over the entire ceiling area. Canyon exhaust air is filtered through AAF Model-D25FG, AAF Model-D50FG, and 12-in.-deep Chemical Warfare Service filters. The exhaust air and filter banks are monitored by a continuously-recording probe-type system.

Explosion-proof incandescent lamps illuminate the cave's interior. An automatic standby power system supplies the canyon if main systems fail.

A proposed storage area, high-level cell and decontamination equipment will round out the Laboratory's facilities. The addition will be 28 × 24 ft. Its hot cell will use two Argonne model-8 manipulators and will have a 12-in. thick steel wall.

HOT LABS

General-Purpose Manipulators

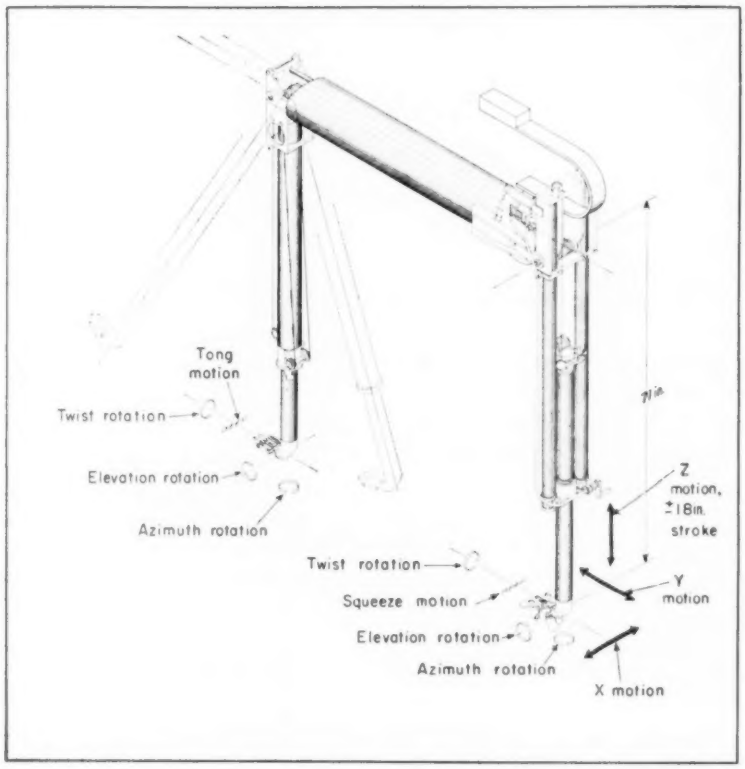
◀ Mechanical Master-Slave Manipulator 45
R. C. GOERTZ

◀ Electronically Controlled Manipulator 46
R. C. GOERTZ and W. M. THOMPSON

◀ Heavy-Duty Hydraulic Manipulator 48
L. N. HOWELL and A. M. TRIPP

Mechanical Master-Slave Manipulator

By R. C. GOERTZ
Argonne National Laboratory
Lemont, Illinois



MASTER AND SLAVE ARM connecting linkages pass through an 8-in.-diameter tube mounted in horizontal hole 115–120 in. above floor level; rollers in hole provide freedom of rotation about horizontal-tube axis

THE MODEL 8 master-slave manipulator is improved over the models 4 and 6 manipulators in the following respects: ease of installation, simple indexing, large area coverage, low friction, stronger wrist joints, remotely detachable tongs, capability of being booted, and modest cost.

Indexing the slave arm with respect to the master arm is accomplished by a worm-and-gear drive at the master side operated by a crank and flexible shaft. An alternate indexing system (Central Research Laboratories, Inc.) uses an airplane-type electromechanical linear actuator.

Since the fully extended master and slave arms are 89 in. long, angular indexing in Y motion is quite effective for extended area coverage. The long arms give quite large coverage even without indexing.

Pulley Friction

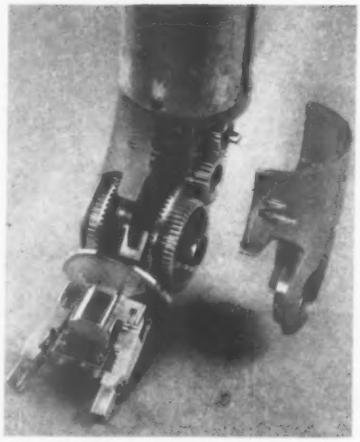
Since Z-direction motion causes many tapes and pulleys to turn, the total friction could be large enough to be objectionable. A test rig was set up to determine the causes of pulley drag.

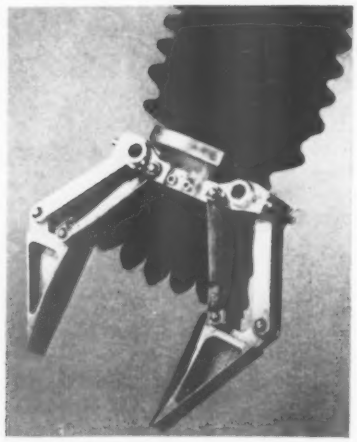
With a spring balance pulling the cable or tape at 2 in./sec under a 35-lb tension, pulley-bearing drag is 0.4 oz per pulley. Dithering the inner bearing races sinusoidally at 14 cps and an amplitude of 30 deg reduced measurable bearing friction to 0.04 oz per pulley; dithering has not been tried on the manipulator.

To determine cable or tape drag passing over a pulley, $\frac{1}{16}$-in.-dia. 7 × 19 preformed stainless-steel cable was tested with U-grooved pulleys and 0.005 × $\frac{3}{16}$ in. Elgiloy tape was tested with flanged and flanged-and-crowned pulleys.

With cables, Z-motion drag would be 40–60 oz for 30-lb wrist-motion cable tension. With crowned pulleys, Z-motion drag is 8–10 oz for 30-lb wrist-motion tape tension. Further drag reduction is expected by using straighter tape, realigning pulleys, and, possibly, dithering pulley bearings.

Tape life tests over crowned pulleys showed failures at 90,000–170,000 cycles for 35-lb tension and the reverse bending resulting when all five pulleys were used. Tests over four pulleys (no reverse bending) had failures at 500,000 cycles or greater.





WRIST-JOINT exterior is curved cylindrical shape; stub fingers (left) are attached to twist-motion spider gear. Rubber boot (right) fits over wrist joint. By means of special jig, various tongs can be clamped over boot and secured in 6 degrees of freedom

Wrist Joints

Two differential side gears drive the wrist-joint elevation (both moving in the same direction) and twist (moving in opposite directions) motions. To achieve greater strength and stiffness from the master-to-slave tape drives, it is desirable to have the tapes move a considerable distance for a given angular motion. The strength is directly proportional to the effective radius of the tape with respect to the side differential gear; stiffness is proportional to the square of the effective radius. A 2.4 gear ratio giving a 2-in. effective radius is designed into the wrist joint. The resulting stiffness for elevation motion, 7 lb-in./deg, is considerably better than previous models.

* * *

The author thanks the Central Research Laboratories, Inc., for modifying drawings to accommodate the crowned pulley system and for supplying a large portion of the detail drawings, as well as supplying some engineering under a contract with Argonne National Laboratory. The author also wishes to thank R. A. Olsen and R. B. Wehrle of the remote control engineering division and R. G. Schmitt now of the Consolidated Vultee Aircraft Corp., Fort Worth, Texas, for working out many of the intricate designs and to thank other members of the remote control engineering division as well.

Electronically Controlled Manipulator

Servo-manipulator needs only electrical connections between master and slave

By R. C. GOERTZ
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Argonne National Laboratory
Lemont, Illinois

AN EXPERIMENTAL electronically controlled manipulator, Fig. 1, has been built incorporating all important features (*1*) of a good general-purpose manipulator. Principal advantages of this electrically connected manipulator over the mechanically connected master-slave type are: considerable separation of slave from master, possibility of completely entombing slave arm, almost unlimited volume coverage of slave when mounted on mobile unit, future possibility of handling loads many times operator's capacities.

Servomechanism

The servomechanism used in this manipulator, Fig. 2, is the simplest and most stable of several developed at Argonne National Laboratory. It is a force-reflecting positional servo (*2*, *3*).

A description of the servo's operation follows. The input motor produces torque opposing the operator to provide feel; the output motor produces torque that moves or pushes against the load. These two motors are supplied with the same amplified positional error signal, E, and therefore produce equal torques whether the system is moving or applying static force. The direction of these torques is such that they tend to reduce positional error and bring input and output into positional correspondence. Since operation is unaltered if input and output are interchanged, the system is completely reversible (bilateral).

Servos must always have some kind of damping to prevent instability (hunting). This servo is stabilized by error-rate damping. The two tachometer-generators are so connected that their voltage difference is essentially a pure error-rate signal. Low time delay in the amplifier and tachometer circuit

make it possible to set the loop gain very high and obtain damping greatly in excess of critical.

The error voltage is limited just above maximum-power level; the error-rate signal is not limited. This prevents damage to apparatus due to excessive slave-arm speed while synchronizing; even for large differences in arm position, difference of motor speeds is limited by the high damping signal.

Manipulator

After the servo was tested and found to perform very well, a full-scale manipulator having a servo for each motion was built. Tapes and cables that produce the various motions were wound on drums fastened to the output (and input) gear shafts. All gear boxes were fastened to the base plate. Inertia, friction, and the interaction of moving parts are low. All motions are independent except for wrist-joint elevation and twist, produced, respectively, by similar and opposite rotation of the same two gears.

Performance of the servos was not greatly affected by their incorporation into the manipulator. Stability was reduced by a factor of two due to lack of stiffness of the arms but was still quite adequate. There was no indication of lack of stability due to interaction. The effective inertia presented to the operator was satisfactory for most motions.

The manipulator has been demonstrated and tested for a year in conjunction with two industrial-television chains adapted for 3-D viewing. It is a laboratory model and not the final design, but it has performed extremely well and yielded much useful information while proving mechanical linkage by electrical means feasible.

* * *

We wish to acknowledge the help of R. A. Olsen, R. G. Schmitt, and others in the remote control engineering division in working out many of the mechanical designs, J. R. Burnett, associate professor, Purdue University, for his consultations on force-reflecting servomechanisms, and H. L. Hull† for his enthusiastic support and administration.*

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* PRESENT ADDRESS: Consolidated Vultee Aircraft Corp.

† PRESENT ADDRESS: Capehart-Farnsworth Corp., Fort Wayne, Indiana.

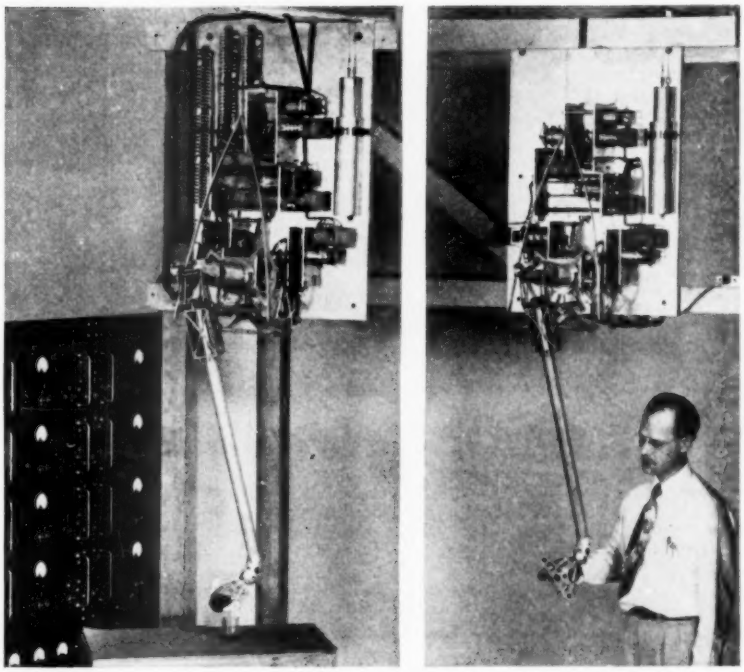

FIG. 1. Electronically controlled servo-manipulator, Model I, has no mechanical connections between master and slave. Servo amplifiers are at the left. The manipulator has all features essential for a good general-purpose manipulator: seven suitable independent motions, natural control motions operable by one hand, load forces accurately reflected to control handle, reversibility (motion can be activated at slave), low effective inertia and friction. In addition it offers high stability and speed-limited synchronization, important in servo operation. Manipulator load capacity is about 4 lb; maximum lineal velocity is about 30 in. sec; stiffness for these motions is about 10 lb/in., of which half is due to the servo system. Entire manipulator requires 2 kw of 208/120-v 3-phase 60-cycle power. Master, slave, and console are connected by 50 ft of 50-conductor cable; several hundred ft could have been used without special precaution

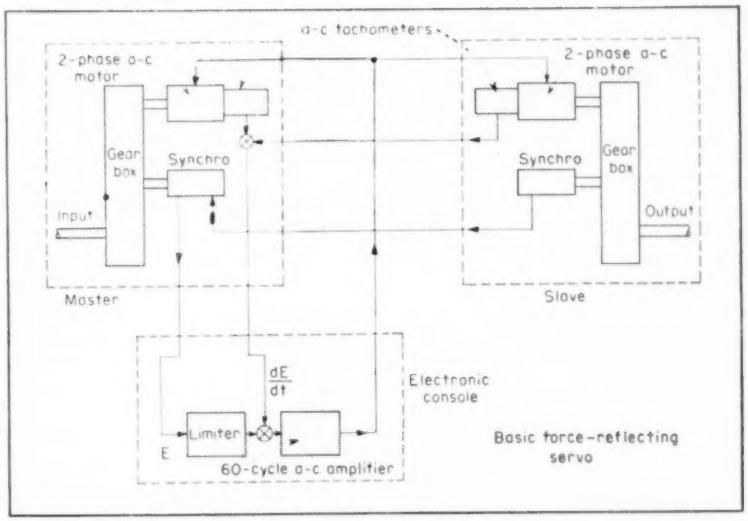

FIG. 2. Force-reflecting servo used for each manipulator motion. Servo amplifier is standard type consisting of preamplifier, phase inverter, push-pull 807's and output transformer. Common d-c power supply is used for all servo amplifiers. All mechanical linkages have high efficiency and are mechanically reversible, and motor drag is small for all loads from zero to maximum. Hence motor torque is proportional to applied voltage and independent of speed whether delivering or absorbing power

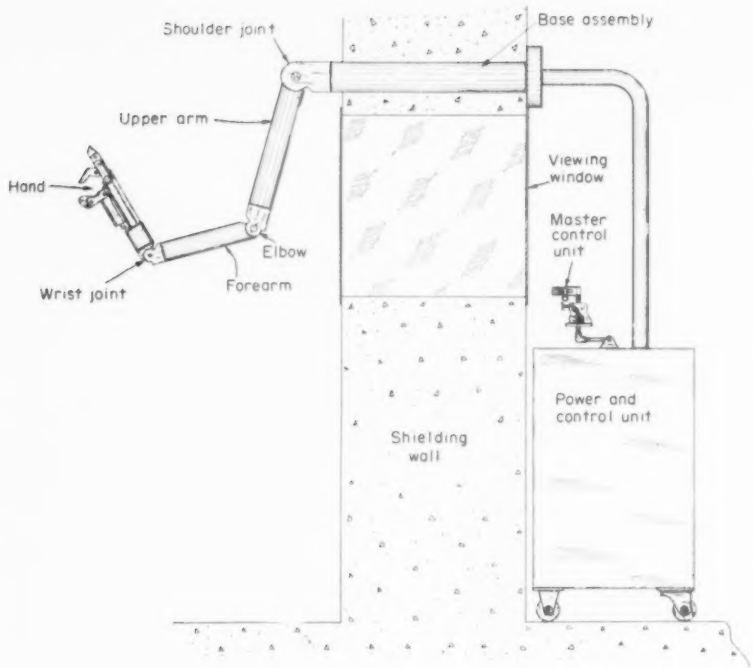

FIG. 1. Hydroman manipulator is shown here in through-wall operation. Two fingers and thumb bend at joints, can exert 17-lb force at tips. Thumb can be positioned against either finger. Wrist swings through 90 deg, transmits 500-in.-lb torque to lift 45 lb in horizontal position. Forearm delivers 1,000 in.-lb of torque from internal reversible motor that can provide continuous rotation at variable speed or rotation through given angle. Elbow and shoulder joints have motions similar to wrist with proportionately higher torque; upper arm is similar to forearm, also gives higher torque.

MASTER CONTROL has nine hydraulic cylinders so arranged that natural motions of operator's hand, wrist, forearm, elbow, and upper arm cause corresponding slave motion. Shoulder-joint and base-assembly controls have not been provided to date, but slave follows master well

Heavy-Duty Hydraulic Manipulator

By L. N. HOWELL
and A. M. TRIPP
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Oak Ridge, Tennessee

THE HYDROMAN, Fig. 1, is a general-purpose heavy-duty plug-in manipulator with slave motion and feedback of feel provided by simple hydraulic servomechanisms. It represents further development of an earlier hydraulic manipulator.

Servomechanism

As shown in Fig. 2, forces and displacements at the slave should be proportional to corresponding quantities at the master. The hydraulic control circuit employed for each motion is shown in Fig. 3.

Displacing the master-control-cylinder piston to the left forces hydraulic fluid into the valve-spool-actuating cylinder moving its piston to the left along with the servo-valve spool. Oil under pressure flows from the power unit through the servo valve to the rod end of the large boost-cylinder piston moving it to the left; oil from the head end is exhausted through the servo valve. As the large piston moves, it pulls the small piston on the right end; the slave-hand actuator moves the same distance since it has the same cross section.

There is a shoulder at the junction of large and small piston rods whose area is equal to that of the master-control cylinder. This shoulder is in a separate center chamber in the boost cylinder. Moving the shoulder to the left increases the center-chamber volume, permitting the spool-actuating piston, spring-loaded to the right, to return to its neutral position and stop the boost pistons.

The ability of the slave actuator to track the master is evidenced by the fact that the spool-actuating piston never moves over $\frac{1}{16}$ in. from its neutral position. This piston hardly moves when the master-control piston is actuated slowly.

Force-reflection is accomplished by other hydraulic components. Disregarding seal friction, pressure in the rod end of the slave-actuating cylinder is proportional to the force exerted on the rod. This pressure is transmitted to the right side of the differential-feedback cylinder, causing the piston to produce a force on the end of the force-ratio bar. The force-ratio bar transmits this force to the spool-actuating piston rod and then through the hydraulic line to the master-control-cylinder piston. Motion of the force-ratio bar is very small because the nut on the spool-actuating piston rod is close to or in contact with the end of the bar. Pressure on the head end of the slave hand actuator from fluid friction during rapid operation is admitted to the left side of the differential-feedback cylinder opposing the right hand piston. Such an arrangement gives a true reading of slave-actuator load. Movable pivot allows operator to select ratio of reflected to applied force.

Seals

Cup-type control-cylinder seals are made of Neoprene and Teflon. Ordi-

nary O-rings require high operating forces due to friction; the cup-type seal has narrow sealing lips to reduce running friction. In addition, the Teflon that backs up the sealing lip rubs off and contributes to low running friction. Starting friction is minimized by limiting lip precompression to that necessary for sealing at zero pressure. The seal operates in water on polished and anodized aluminum cylinder surfaces.

The elimination of external flexible hydraulic lines to permit through-wall use required that the wrist joint be a multiple rotary hydraulic seal.

Figure 4 shows the wrist joint in cross section. A rack and a gear segment are employed to produce rotation. The rack teeth are on a hydraulic cylinder that moves in ways machined in the forearm. The piston rod is fixed to the forearm. Oil to each side of the piston is supplied through passages in the piston rod. The segmented gear teeth are machined on a part attached to the hand. Through this joint pass all hydraulic lines leading to the hand. Lines from the forearm lead into the end of a multigrooved spindle where they line up with axial passages. Short radial passages connect the circumferential oil grooves to the axial passages. On each side of every oil groove there is an O-ring for sealing. Only one O-ring separates oil grooves. The center of the segmented gear is a cylinder that fits the spindle. Radial passages in the cylinder wall match the circumferential oil grooves of the spindle. These passages lead to the hydraulic lines serving the hand.

A test multiple rotary seal was built to determine life expectancy and sealing qualities. Each groove and line was filled with oil, some grooves having no pressure, some 500 lb/in² and some 1,000 lb/in². Each hydraulic line was fitted with a pressure gage and closed after filling and pressurizing. Leakage would have been evidenced by pressure changes. The model was operated for 100,000 cycles of 90-deg rotation. It operated for 75,000 cycles without any leakage. Upon completion of the test the unit was disassembled to check for O-ring wear and scoring of metal parts. The O-rings were worn considerably.

The 6,000-cycles-per-hr rate of operation developed considerable heat due to friction accelerating wear. Normally a manipulator joint will never operate at such high rates for any appreciable length of time.

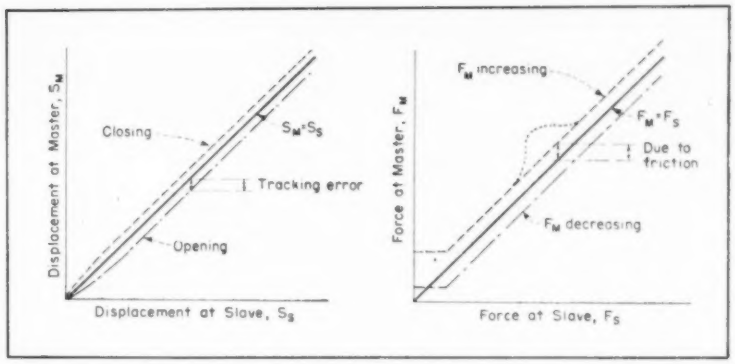

FIG. 2. Correspondence between slave and master displacements is indicated in curve at left. Ideally the two should be equal, as shown by solid line; actually friction, line expansion, air in hydraulic fluid, shift of O-rings in grooves, etc., cause tracking error as shown. Correspondence between forces is nonideal too, as shown in graph at right. For small forces at master, slave force is independent because the small return-spring force must first be overcome. For larger master forces there is a small difference due to seal and linkage friction. Dotted hump illustrates poor tracking when quickly applied force results in fluid friction and restricted flow.

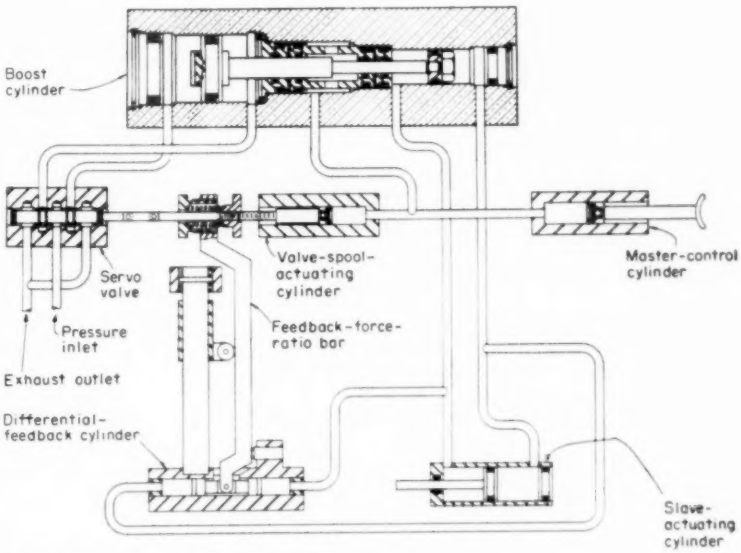

FIG. 3. Hydraulic control circuit for Hydroman

Performance tests on component parts indicate that Hydroman will offer good position control, feedback of feel and a wide range of force multiplication. Slave components respond rapidly and smoothly and promise great advantages in force and power for their size. The use of simple circuits and internal slave lines contributes toward low maintenance.

Hand and wrist along with necessary controls are nearly complete. A demonstration of the manipulator is expected soon.

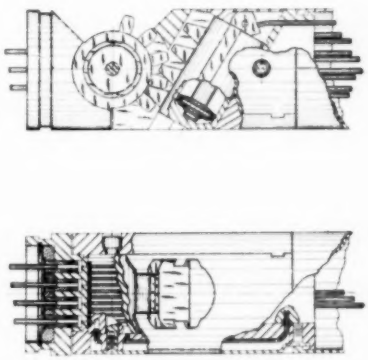

FIG. 4. Wrist joint, showing multiple rotary seals

HOT LABS

Remote Equipment

- Equipment for Processing Reactor Fuels 50
  G. R. WINDERS, E. H. DEWELL, R. G. CLARK, M. D. VOSS, and K. MALABY
- Hydraulically Operated Remote Pipetter 52
  K. H. HAMMILL
- Hot-Lab Fiberglas Air Filters 54
  JOHN F. GIFFORD
- Crane and Fork Lift for Remote Handling 55
  D. W. HUSZAGH
- Remote Metallographic Equipment—1. Remote Microscopy 56
  S. H. PAINE, F. L. BROWN, R. A. BLOMGREN, N. J. G. BOHLIN, and L. W. HAAKER
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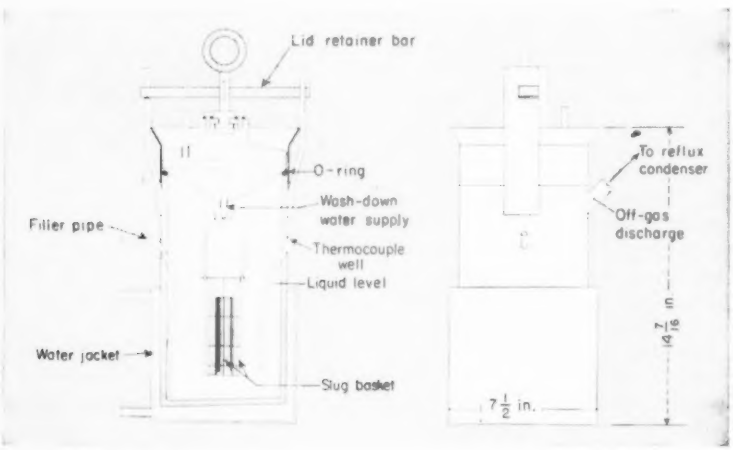
- Handling Irradiated Fuel-Specimen Capsules 60
  J. H. KITTEL
- Low-Cost Plastic Sealer 61
  H. SUSSKIND
- Mobile Shield for Cyclotron Target Removal 62
  R. A BLOMGREN and N. J. G. BOHLIN
- Binocular Periscope Viewers 64
  J. M. HOLEMAN

Equipment for Processing Reactor Fuels

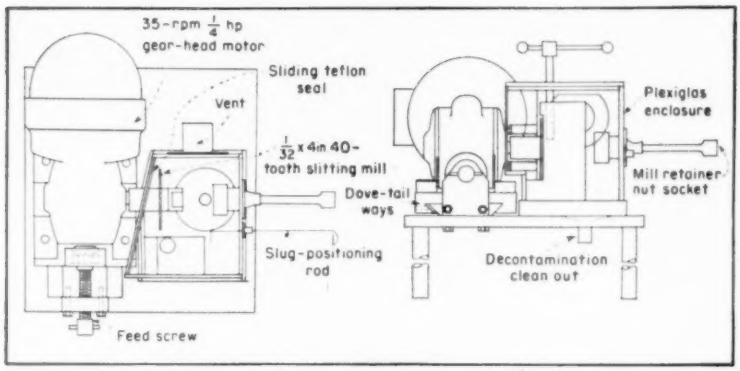
Five units are used for remote experimental processing of reactor fuels—slug dejacketer, saw, thimble stripper, crucible remover, and sample dissolver

By G. R. WINDERS, E. H. DEWELL, R. G. CLARK, M. D. VOSS, and K. L. MALABY
Ames Laboratory, Iowa State College
Ames, Iowa



1 HOT-SLUG DEJACKETER

Manipulator places slug with bonded aluminum jacket in slug basket. Small crane lowers lid assembly with slug into container; lid is secured. Alkaline dejacketing solution is gravity fed into container, submerging entire slug. Hot water in jacket starts reaction; water is changed to cold as reaction progresses, controlling reaction rate. Reacted solution is withdrawn; system is decontaminated with water rinse; flange above lid is filled with water to rinse seal system as lid is removed. Dissolver solution is transferred in stainless-steel vacuum system; off-gases pass through stainless-steel reflux condenser before final discharge

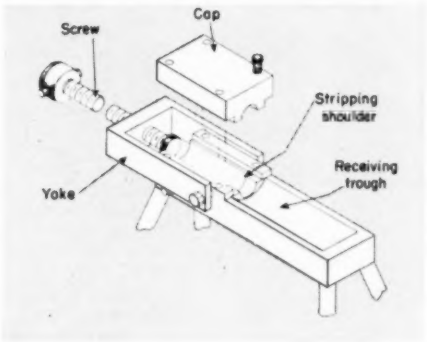


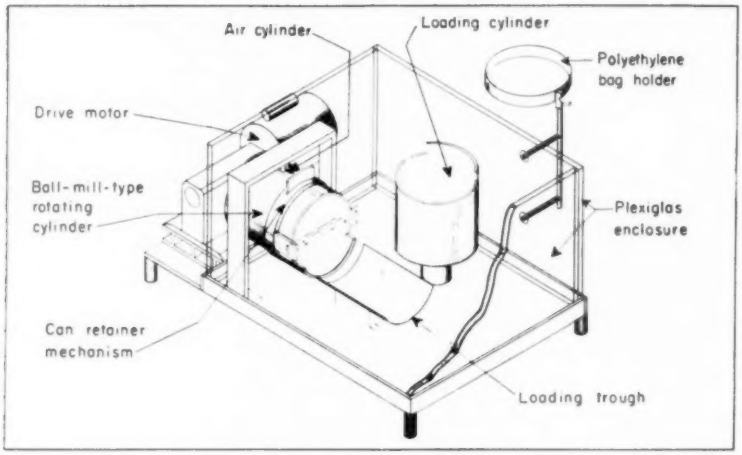
2 HOT-SLUG SAW

Slug is placed in vise with manipulator tongs. Lid is placed on enclosure and slug is laterally positioned with small side manipulator. Vise screw is secured and feed screw advanced for cut; cutting oil is used and feed screw is operated from outside with extension. To change cutting blade, impact wrench and extension are used to remove retaining nut; nut snaps into wrench socket. Washer and blade are deposited in predetermined locations and new blade installed; washer and retaining nut are reinstalled. Sample wafers and slug remnants are retrieved with manipulator-operated tongs

3 RADIATION-THIMBLE STRIPPER

Both ends of radiation thimble are cut off in hot-slug saw before unit is placed in stripper. After inserting thimble into primary bore, yoke is lowered into position. Pressing screw is advanced by remote cranking from outside shielding wall; smaller bore passes interior aluminum cylinder and jacket is retained in block. Cylinder halves drop into small receiving trough; irradiated samples are removed for processing



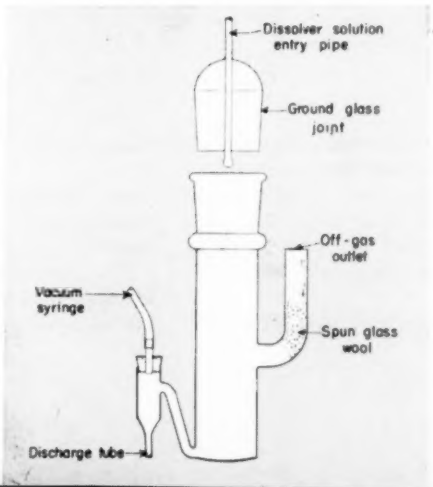


4 CRUCIBLE REMOVER

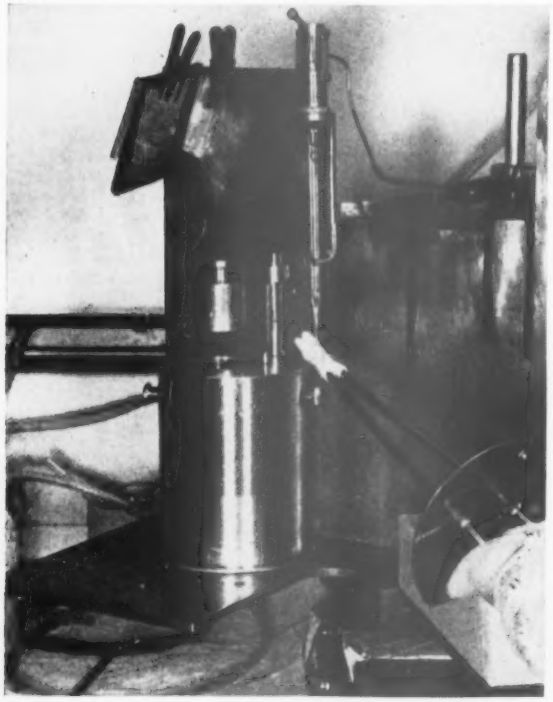
Ball-mill type of apparatus removes bonded-graphite crucible from uranium-alloy casting. Seven-inch cylinder is mounted on gearhead-motor shaft; pneumatically operated can retainer is electrically interlocked with driving motor. One-gal can lined with Neoprene and metal-cutting Do-All blade is placed in manually rotated vertical cylinder; casting and crucible are placed in can, 1 liter of water added, and lid secured with drop hammer. Loaded container is put in powered cylinder, retainer mechanism actuated, and motor started. After crucible removal, can is returned to vertical cylinder, lid dropped into polyethylene sack, and casting fished out with manipulator and rinsed off. Crucible is disposed of in can

5 SAMPLE DISSOLVER

All-glass apparatus utilizes 2-in.-diameter Pyrex container 10 in. long for dissolver basin. Millicurie-level sample is introduced into basin; reagents are added by gravity or pressure feed, usually filling side arm partially. Dissolution can be hastened with infrared lamp. At end of reaction, slight vacuum at syphon tee starts syphon to drain dissolver, regulating flow by syringe displacement. Undissolved solids remain behind. Successive reagent steps may be used by repeating procedure. Dissolver can be cleaned by adding rinse solutions through dome; spray head gives good wash-down action and quantitative transfer of materials to receiver

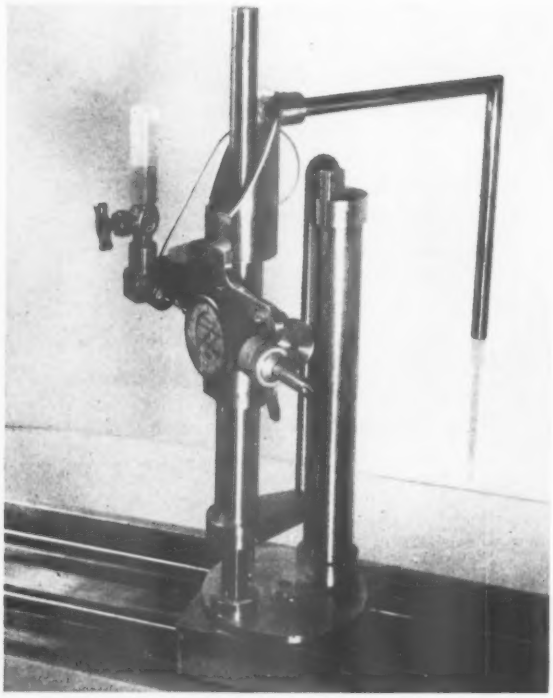


1. Goldberg pipetter has been replaced by . . .



GOLDBERG SAMPLER rotates for placing doorstop in position. Slotted stainless-steel shield guides control arm. Control, holding pipet, moves vertically on post. After lowering pipet into doorstop and raising sample into pipet, control arm is placed between slots and pipet wiped with shielded tongs. When miniscus coincides with calibrated mark, sample is expelled into dilution flask

2. New Hanford unit . . .



HANFORD REMOTE PIPETTER is read on dial micrometer gage in volume units by utilizing precision-machined steel plunger. Total capacity is 100 lambda (lambda = 1/1,000 ml). Rack and pinion gear in conjunction with counterweight facilitates accurate vertical control. Measured volumes of liquid are forced from tip of Teflon or Fluorothene pipets by displacement. Pipet's 0.012-in.-diameter capillary minimizes diffusion, permitting 1-lambda sample to be measured with ±3% accuracy

Hydraulically Operated Remote Pipetter

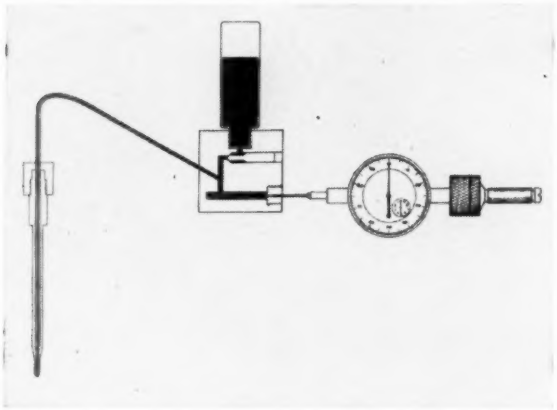
By K. H. HAMMILL
General Electric Company
Hanford Atomic Products Operation
Richland, Washington

THE REMOTE PIPETTER has been developed as a unit that can be operated by semiskilled personnel. High-level radioactive samples are received in heavy containers called doorstops; primary dilutions are made using calibrated equipment.

One sampling device is the "Goldberg Sampler." Since the thin shields of this unit do not provide suitable protection while sampling, attempts to replace it led to the development of the Hanford remote pipetter.

The Hanford pipetter, operating on a hydraulic principle, is an adaptation of the Gilmont ultramicro buret. Teflon and Fluorothene pipets are used since they are not as fragile as glass, and are not wetted by the sample—hence, do not become as contaminated as glass. After taking aliquots from 200 curies in 100 ml for 8 months, a dry pipet read 500 mrad and 60 mr at 4 in. After decontamination, 500 cpm remained.

3. Which is used for . . .



TO OPERATE PIPETTER, pipet is screwed into holder. Hydraulic system is red-dyed paraffin-base oil. Control knob is rotated until 1,000 is indicated on dial. Valve is opened, filling pipet with oil by gravity. When pipet is filled, valve is closed and excess oil wiped from tip. With pipet tip immersed in sample, control knob is rotated counterclockwise, pulling plunger from chamber and forcing sample into pipet. When filled, pipet is raised and moved to cleaning funnel where tip is washed. Pipet is then moved to next position where aliquots are expelled

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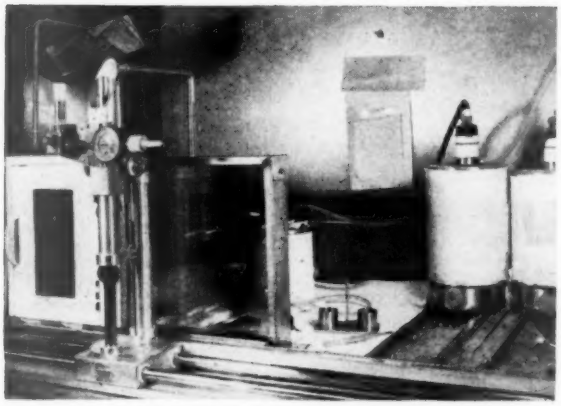
4. Sample dilution . . .



DILUTION INSTALLATION using pipetter has beta and gamma shielding. Doorstop is introduced through barricade door. After obtaining sample, pipet tip is washed over waste funnel. Sample is pipetted into flask and diluted to calibrated mark. Sample and diluent are mixed by magnetic stirring, rotating magnet being mounted under stainless-steel tray below flask holder. Pipet is removed from holder and cleaned. Aliquots are pipetted onto counting disks on movable tray and dried under lamp

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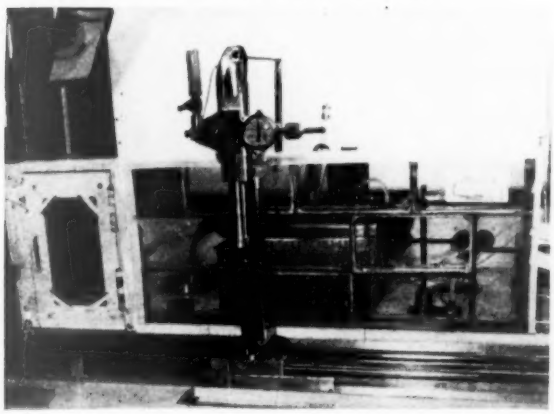
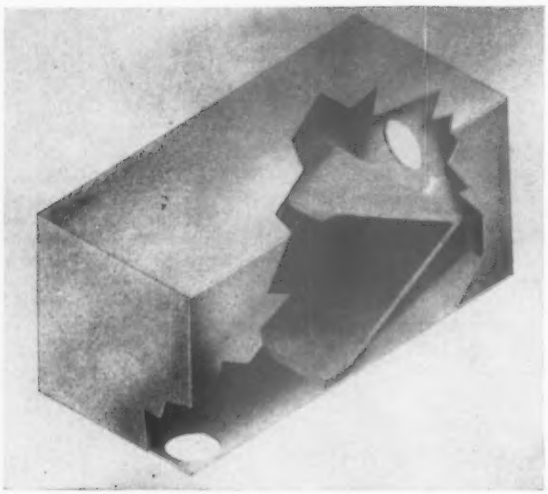
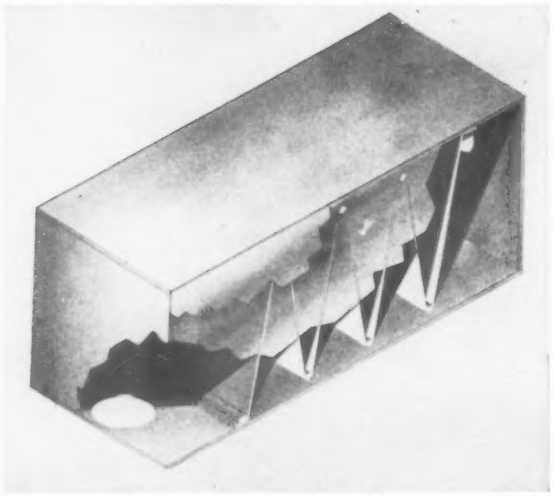
5. And specific-gravity determination



SPECIFIC GRAVITY is determined by falling-drop method in another shielded installation using remote pipetter. Radioactive-solution determinations can be made in as little as 3 min. Waste trap and cleaning funnel are same as in dilution installation. Additional line is used for removing radioactive sample from bottom of falling-drop tubes. Similar installation is used for determining specific gravity of solutions that do not have beta or gamma radiation



SMALL GLOVED-BOX FILTER (Radioisotopes Applications Co., Berkeley, $6), rated at 20 ft³/min, uses Owens-Corning type AA Fiberglas in ½-in.-thick mat supported on hardware cloth. Cardboard-box interior is acid-resistant coated, which seals edges of Fiberglas. Unit weighs 13 oz. No bolts or gaskets are used. Port locations at side and end permit quick handling and allow airduct locations to deviate ¼ in. in any direction. Filter is installed by thrusting end over tapered duct and face over box-exhaust duct; removal can be done with tongs. Filters reading up to 5 r have been changed this way

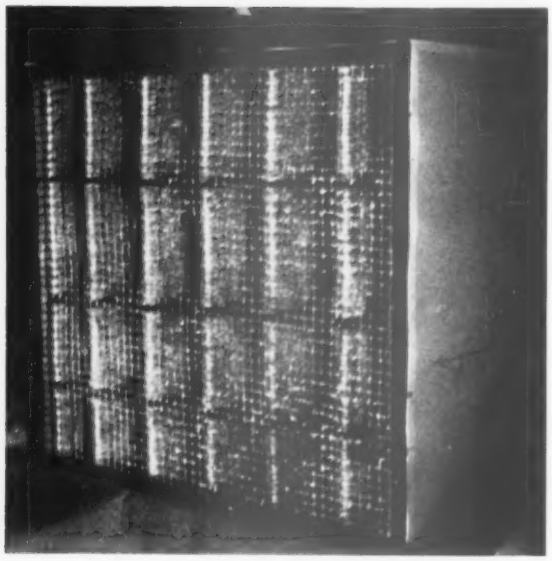


LARGE GLOVED-BOX FILTER, rated at 250 ft³/min, is also used for sandblast-decontamination chambers. Plywood unit costs about $25. Fiberglas mat is held in pleated shape by wood dowels. Usually, AA Fiberglas is used; for lower pressure drop and less efficiency, coarser type B is sometimes used. No bolts are used. Neoprene-sheet ring is cemented onto each port as flexible expansion gasket. Filter is installed by pressing filter port over tapered duct. Although larger and heavier than filter at left, this unit has same disposability

Hot-Lab Fiberglas Air Filters

By JOHN F. GIFFORD

Hanford Atomic Products Operation, General Electric Company, Richland, Washington



HIGH-CAPACITY FILTER is rated at 700 ft³/min at pressure drop of 0.8 in. of water. Plywood and coated-cardboard unit, with open-face plastic or metal screen, costs about $25. Cardboard spreaders on exhaust side prevent deformation of mat. Filter was developed as cheaper substitute for CWS filters for individual hoods where activity levels are moderate or not associated with dry powders. Comparing two: our 14-lb filter has 70–90% efficiency and 0.7-in. pressure drop with 600-ft³/min airflow; CWS filter weighs 35–45 lb, 1.1-in. pressure drop at 600-ft³/min, and 99.9% or better efficiency. Thus, former is easier to handle and gasket seal is less critical

At Hanford, three sizes of disposable Fiberglas filters have been used over the past three years for filtering exhaust air from individual hoods and gloved boxes.

These filters were designed primarily for disposability and low cost. The life of these filters is usually around a year, although some have been used longer; some, as in the sandblaster, have lasted only a few weeks.

Crane and Fork Lift for Remote Handling

By D. W. HUSZAGH
Nuclear Engineering Department
Brookhaven National Laboratory
Upton, New York

OUR PERMANENT WASTE DISPOSAL pilot plant employs a stepwise counter current process using 12-in.-long, 4-in.-diameter refractory cylinders containing spaghettied montmorillonite clay as disposable ion exchangers. The process stream is passed through four of these exchangers in series, with the fission products being deposited in the clay during passage. When the first-stage exchanger becomes saturated with fission products, the process is interrupted, the saturated exchanger is removed and fired in an oven, the succeeding exchangers are moved up one stage, and a fresh exchanger is added as the fourth stage.

In practice, the refractory ion exchangers are contained and handled in specially designed stainless-steel cans, which protect the brittle exchangers and provide fittings for placing the exchangers in the process stream. Since the cans with enclosed exchangers weigh 40 lb each, power-operated manipulators were considered necessary. The general-purpose manipulators available were far too expensive, so two special-purpose machines and their control panels were designed and built to fit pilot-plant requirements at a total cost of under $12,000.

Cantilever Crane

The larger and more versatile of the two is a cantilever-beam crane. It consists of a framework base upon which rotates a large reinforced spur gear that supports and drives the beam and its supporting structure around a central column of 4-in. pipe. A four-wheel carriage traverses the beam. Suspended from it is a telescoping column with a simple pincer at its end. The beam is rotated by a gear motor in the base, while the carriage drive and the telescope-rotation drive are powered by gear motors mounted on the upright beam supports. Since the crane base is located behind a 7-ft-high shielding wall, these drive motors are readily accessible. The telescope extension and retraction drive is powered by a rotary air motor mounted on the upper end of the outer sleeve. The pincer wrist action is powered by a rotary air motor, and the pincer squeeze is provided by a pneumatic cylinder. The lines supplying compressed air to both pincer and wrist are fed through a specially designed reversible pneumatic power reel and idler reel. These reels prevent tangling of lines and enable the crane operator to control the slack accurately. The pneumatic motors for telescope, wrist, and reel drives develop ½ hp, are remotely reversible, and are 1/10 the size and ½ the price of equivalent electric motors. They feature controlled speed and torque variation between 0 and 500 rpm, and they may be stalled indefinitely without injury.

The crane movements are as follows:

Beam rotation—360 deg; single speed, 72 deg/min.

Carriage traverse—8 ft; single speed, 4 ft/min.

Telescoping action—8 ft; variable speed, 0 to 5 ft/min; 200 lb lift; 300 lb load.

Telescope rotation—360 deg; single speed, 5 rpm.

Wrist bend—120 deg from vertical; variable speed; 250-lb torque at tip of pincer.

Pincer action—0 to 45 deg claw separation; variable squeeze, 0 to 30 lb at tip.

The motors and mechanical transmissions are protected by appropriately located load-relieving clutches and limit alarms.

The crane performs the following specific operations:

1. Removes saturated exchanger can from process stream.

2. Disassembles can, removes exchanger, and places exchanger in oven.

3. Places fresh exchanger can in fourth stage of exchanger process section.

4. Removes fired exchanger from oven and places in lead pig for transport to burial or test site.

5. Transports and positions *p*H monitor alternately between buffer solution and process stream.

In case of power failure or motor burn out, all electric motors can be readily disconnected from the transmission systems, and the crane can be operated by muscle power from the cold area. All servicing can be done in the cold area.

Fork Lift

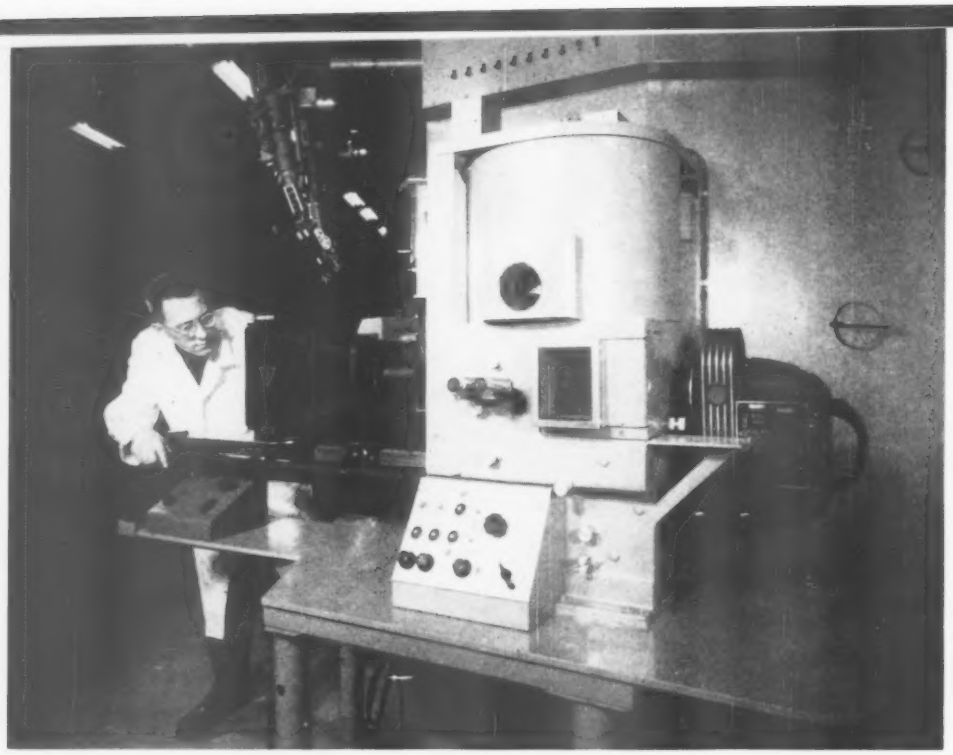
The second machine, which serves only to aid the crane in removing and adding exchanger cans in the exchanger-process section, is a pneumatically powered fork lift.

It consists of two parallel vertical-channel beams, which are bridged at top and bottom. Between and parallel to the beams are two guide rods on which rides the fork-support box. On this box is mounted a horizontal forked platform that can be extended and retracted 5 in. in the horizontal plane by a pneumatic cylinder, also mounted on the box. The fork-support box is raised and lowered by two pneumatic cylinders; the lower cylinder is mounted on the piston rod of the upper cylinder, which is foot mounted to the upper channel-beam bridge. The effect of this mounting arrangement is to guarantee three definite fork operating heights. The cylinder strokes are 6 in. and 18 in. for a combined stroke of 24 in. All cylinder supply and return lines are coupled through throttle valves so that any cylinder speed desired is obtainable.

The actual function of the fork lift is to position the intermediate-stage exchanger cans in such a manner that the crane is able to remove the first-stage can and replace the last-stage can.

At this writing, the fork lift has performed satisfactorily for three months. Greater versatility is desired for the crane with respect to the usability of the pincers. This has been obtained in some measure through the construction of a "clamp-on" attachment for the pincer claws.

"Feel" does not seem necessary for this application. Speed control over the carriage-traverse drive, which would ease the operator's job, can be obtained by replacing the induction-motor drive with a reversible universal motor with auto-transformer voltage control.



METALLOGRAPH bed runs through both sides of shield. Lower portion of stage cubicle is stationary box with 4-in.-thick lead walls encased in steel-plate shell. Holes receive light from source at right and deliver it to camera at left or to eyepieces at control box. Mechanical controls are brought through this portion of shield; steel and lead-glass door permits viewing their operation and affords ready access for changing objectives or for making hand adjustments on instrument

Remote Metallographic Equipment

High-quality results in remote metallography depend on the microscope and the sample preparation

I. REMOTE MICROSCOPY

By S. H. PAINE, F. L. BROWN, R. A. BLOMGREN, N. J. G. BOHLIN, and L. W. HAAKER
Argonne National Laboratory, Lemont, Illinois

IN STUDYING metallographic properties of metals damaged in nuclear reactors, two main obstacles must be surmounted:

1. Maintaining the quality of results while reducing a skilled hand art to a mechanized technique—at the same time striving for maximum speed.

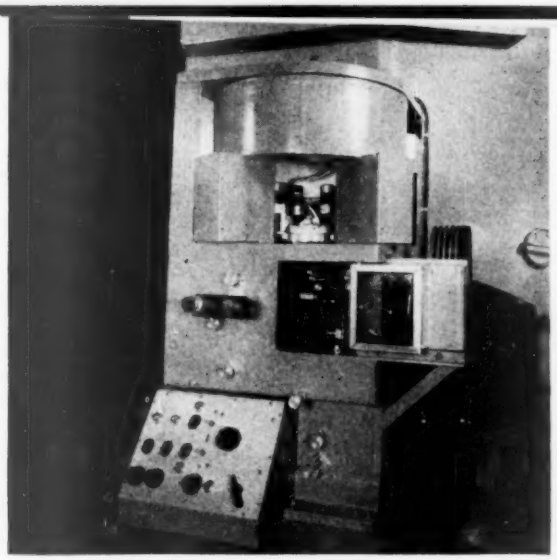
2. Minimizing difficulties of radioactive contamination resulting from grinding and polishing hot specimens.

The ANL hot-metallographic system is not very complicated, although the units have been highly developed. For speed in handling specimens, the flow of work can be maintained without lengthy servicing operations between steps; servicing or decontaminating one operation does not shut down all others. For quality sample preparation, we have centered attention on the polishing machine. It should be possible to prepare specimens in such numbers that the metallurgical microscope is kept busy. This system is now in the shakedown stages of operation. However, experience is not sufficient for a thorough evaluation.

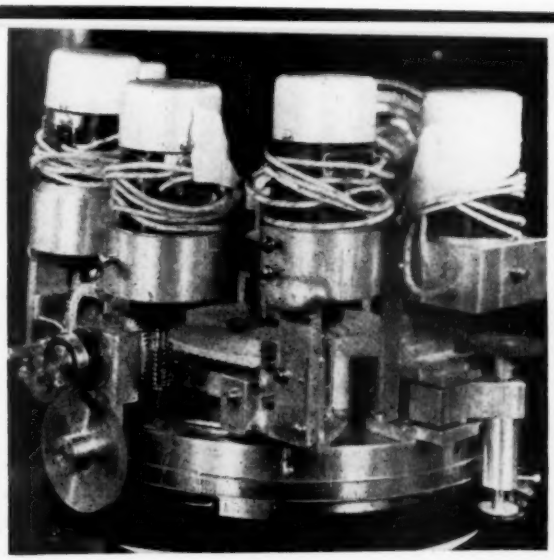
Both Westinghouse Electric Corp. (Atomic Power Div.) and General Electric Co. (Knolls Atomic Power Laboratory and Hanford Works) have developed equipment and procedures for hot metallography. A complete metallographic cave in operation at ORNL has been reported.*

In planning the ANL metallographic setup, we decided to obtain the best optical microscope available, with emphasis on the polarized-light attach-

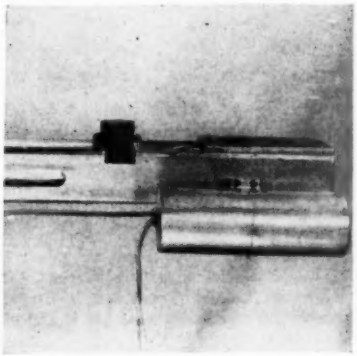
* M. J. Feldman, *Metal Progress* **64**, 97 (1953).

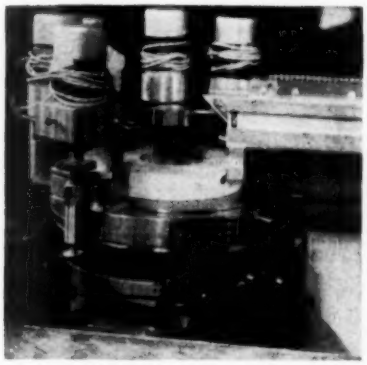


ROTATING TURRET, surrounding mechanical stage of microscope, constitutes upper portion of shield. Turret, 4 in. of lead in steel shell, is suspended on ball-bearing track. Lead-glass window permits observation of stage action and position. Opposite window, sector of turret is open to receive specimens from cave access hole. Rotation of turret, as shown, brings opening around for hand access to top of stage from any angle; thus, motors and controls are serviced and specimens placed on stage by hand. To reduce shielding bulk, microscope stage is loaded with depleted uranium inserts; specimens are put in depleted uranium pig on stage to counterbalance shield weight



STAGE positioning is controlled at eyepiece viewing station; push-button panel handles 6 motions incorporated into stage, as well as specimen-transfer operation from cave to stage and reverse. Field-scanning motions (x and y traverse and rotation) have dual-speed ranges; jogging circuit permits accurate positioning at high magnifications. Auxiliary control box carries these motions plus motorized coarse focus to camera viewing station. Two more stage motions are in ANL-developed motorized specimen-leveling device to improve photographic quality. Closeup shows motors and top of auxiliary shielding insert in which is located leveling device





SPECIMEN-TRANSFER MECHANISM receives specimen in upright position inside cave and delivers it upside down to stage, ready for viewing. Interlocks make it impossible to start this operation unless turret and stage are lined up properly

ments. For flexibility and speed in handling the refining adjustments, it was also decided to place the microscope outside the metallographic cave proper, to shield its stage with a special cubicle, and to pass specimens back and forth between the cave and stage. To avoid overburdening the metallograph, an inexpensive bench microscope is used for the frequent checks during specimen preparation. The metallograph is devoted solely to final study of the prepared specimen.

The instrument chosen, the Bausch and Lomb Research Metallograph, is very adaptable to shielding the stage section without interfering with the light source or camera. No modification of the optical system is needed except to lengthen the eyepiece tube a few inches. A B&L-ANL development program has made nonbrowning-glass optical components available.

In the kind of work anticipated at ANL, specimens should infrequently run as hot as 25 curies of Co^{60}, and on the average should be far below this level. Shielding for 25 curies would require 8 in. of lead. To reduce the microscope's shielding-cubicle bulk, the stage is loaded with depleted uranium inserts; specimens are transferred into a small depleted uranium pig on the stage, counterbalanced by a weight so that stage operation is not impaired.

In the table are listed the operations and adjustments that must be considered in the metallograph and the provisions made to use them in the ANL setup. Many functions would be extremely difficult to accomplish if the entire instrument were placed in a cave;

the only gain would be elimination of the specimen-transfer mechanism.

In our development, the unmodified hand operations are possible because either they lie outside the shielded cubicle or can be reached by access ports when no specimen is on the stage. All operations inside the shield that need to be done with a specimen in position are either motorized or adapted by hand-operated remote controls. Safeguards are incorporated into the control system to prevent accidents to the equipment or operator; all controls may be serviced readily through the access ports.

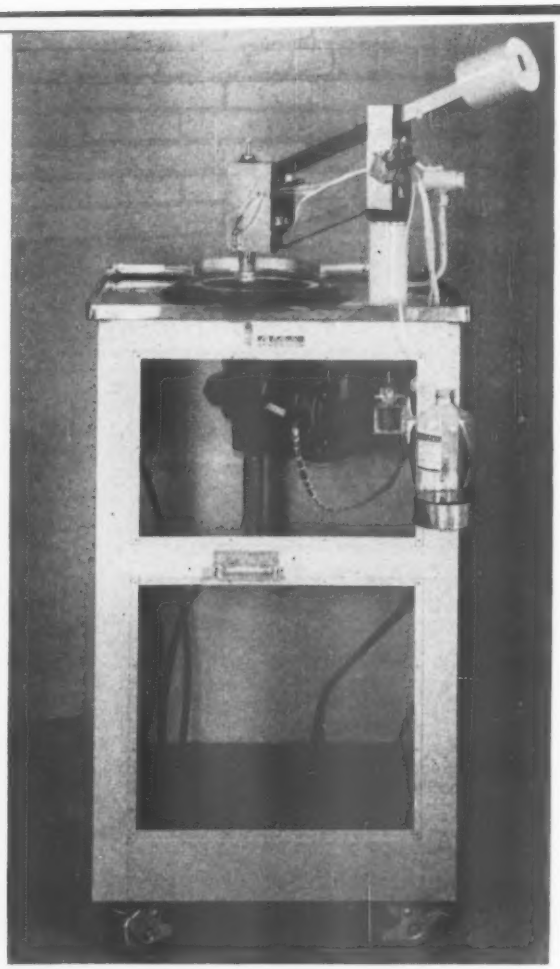
Modified Operation of Metallograph

Provision made for operation	*Unmodified hand operation*	*Remote hand operation*	*Remote motor operation**
Transfer from cave to stage			X†
Transfer from hand to stage	X		
Coarse focus } vertical		X	X‡
Fine focus } vertical		X	
Horizontal traverse (x,y)			X‡
Rotation			X‡
Leveling (x,y)			X
Objectives	X	X	
Filters	X	X	
Polarizer and sensitive tint disc		X	
Illuminator turret	X		
Dark-field adapters	X		
Eyepieces (visual and photographic)	X		
Dust cap and fine-focus slide nut	X		
Swing-out prism (visual and photographic)		X	
Light source	X		
Water filter cell	X		
Aperture diaphragm		X	
Aperture decentering (oblique light)		X	
Field diaphragm		X	
Camera coarse and fine focus	X		
Camera shutter	X		

* Main control panel at biocular eyepiece station.

† Automatic sequence protects operator and instrument.

‡ Auxiliary control box at camera viewing station.



AUTOMATIC POLISHING MACHINE consists of Buehler Ltd. polishing lap with ANL-developed head that automatically sweeps specimen over rotating lap surface while oscillating it through small angle. Pantograph design assures alignment of specimen and lap surfaces and forestalls "grabbing" of lap; pantograph arms are counterbalanced for varying specimen pressure on lap. Massive construction prevents vibration and chatter. Lap surfaces are lubricated by spray nozzle on machine head; mere dampening of lap prevents airborne contamination. Lap surfaces are changed by hydraulic ram operating push rod through machine drive shaft to elevate lap

II. SAMPLE PREPARATION

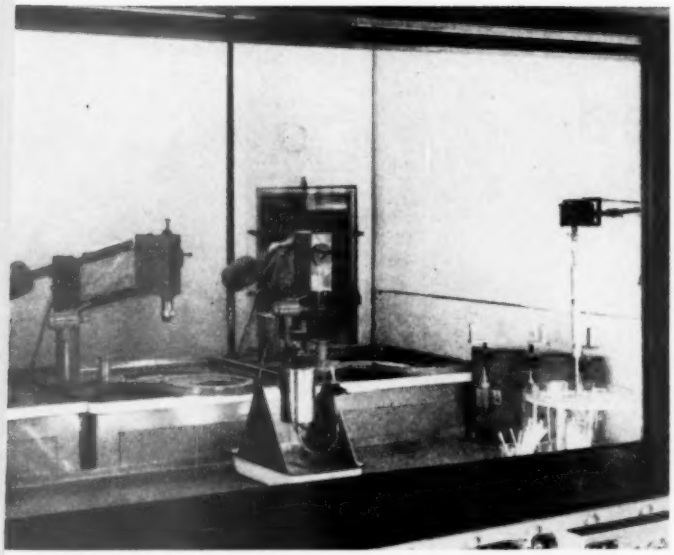
By F. L. BROWN and S. H. PAINE
Argonne National Laboratory, Lemont, Illinois

BASIC PROCEDURE for hot or cold metallography is:

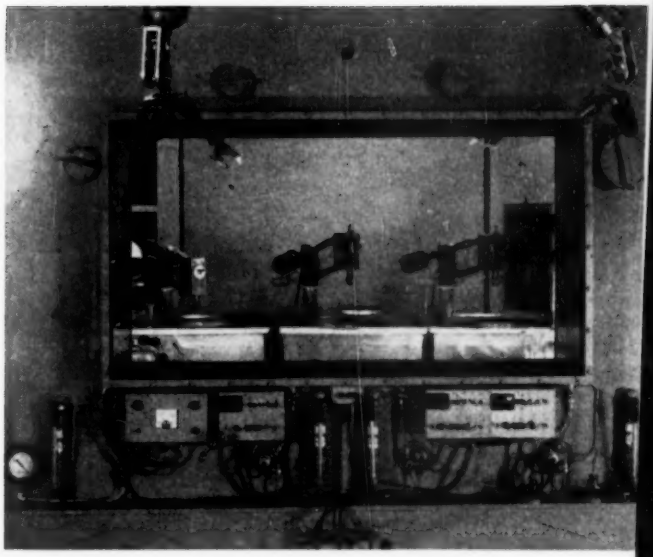
1. Specimen cutting.
2. Rough preparation (mounting, grinding and washing).
3. Final preparation (polishing, washing and etching).
4. Specimen study (examining polish, macroexamination, microhardness testing, microexamination and photomicrography).

In hot metallography, a compartmental separation of the steps is desirable to minimize spreading radioactive contamination. At ANL, the first operation is not done in the metallography facility, but in a high-level cave, using a remotely operated lathe or other equipment. This article considers only the last three operations, which are performed in a triple-cell cave.

The most important unit in specimen preparation is the automatic polishing



ROUGH-PREPARATION CELL. Specimens not exceeding $\frac{3}{4}$ in. dia. × 1 in. long are transferred into cell by cask system. Clean and dry specimens are handled with ANL master-slave manipulators; permanent-magnet device is also used to prevent manipulator contamination. Modified Buehler Ltd. Speed Press is on left side of cell; manipulators locate specimen on face of ram, introduce mounting powders, and operate capstan. Specimens are mounted in Bakelite Co. VMCH backed up with Bakelite (mount dimensions are 1 in. dia. × $\frac{3}{4}$–$1\frac{1}{4}$ in. long) and polished on exposed face. Iron washer is embedded in back end of mount for magnetic handling; copper wire makes contact between washer and exposed specimen end for electrolytic etching. Three automatic grinding machines are across back of cell; hydraulic pumps for lap-removal jacks and electrical controls are outside cell. Diamond grinding compounds are ejected from syringes with crank-and-screw arrangement. Following each grinding operation, sample is washed, swabbed with cotton, rinsed in alcohol, and dried in warm-air blast (ultrasonic cleaner will eliminate swabbing) to remove grit particles



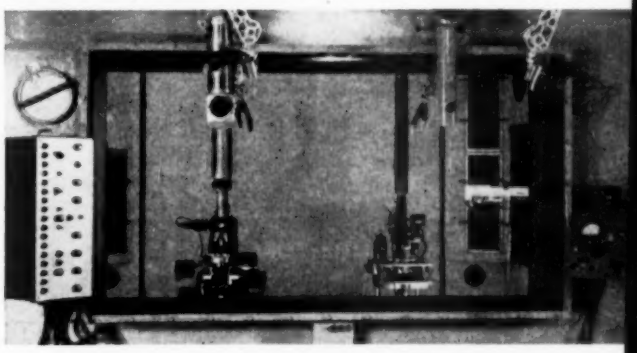
FINAL-PREPARATION CELL. Endless-bucket arrangement makes transfer from left cell to center cell, reducing cross contamination between cells. Three polishing machines are across back of cave. Not visible to left of bench in front of machines is lap-storage box and paper-disk container. Disks are changed with manipulators; cloth-covered laps are changed by hand under ventilated hood outside of cave. Diamond-compound dispenser at right and washer are same design as in grinding cell. For electrolytic etching in center cell, sample is clamped, with polished surface down, over hole in stainless-steel electrolyte container. Cathode connection is through back of mount; container serves as anode; rectifier and current controls are outside cave. Chemical etching is performed by agitating specimen with magnet holder in etchant. Radioactive liquid and solid wastes are collected in containers in cells. Drains connected to polishing and grinding benches collect lubricant from each machine in drum at rear of each cell. Cardboard buckets for dry wastes are at rear of polishing benches

SPECIMEN-STUDY CELL. Standard B&L bench microscope equipped with motorized stage, motorized focus, and periscope is used for examining specimens during course of polishing.

MICROHARDNESS TESTING. Remote Tukon Hardness Tester (Wilson Mechanical Instrument Co.) is equipped with periscope and motorized focusing and alignment mechanisms. Hardness tests are made routinely on polished specimens.

MACROEXAMINATION. B&L remote binocular periscope is to be installed for macroexamination and photography. Additions to be made by ANL include motorized stage and remotely operable lighting system.

MICROEXAMINATION, PHOTOMICROGRAPHY. Transfer system moves samples from cell to metallograph stage outside of cave



machine. It must provide high-quality results and have the flexibility demanded by differences in preparation routines.

Operation of the machine is identical for both grinding and polishing, except that a wide variety of lap surfaces are available for polishing whereas only emery disks and papers are provided as lap surfaces for grinding.

For the hot-metallography setup, a three-cell, general-purpose, intermediate-level cave was designed and constructed for the Metallurgy Division by the Remote Control Engineering Division. Cave construction is discussed in another section of this report (p. 98). The facility provides 2 ft of magnetite concrete in steel-shell walls and zinc bromide "fish-tank" windows.

The three cells permit separating the dirty, clean, and optical preparation steps. Rough preparation is confined to the left-end cell, final preparation to the center cell, and specimen study to the right-end cell. Airborne radioactive contamination of optical equipment, as well as cross contamination of the final polishing equipment with coarse grit, is further ameliorated by adjustment of the air-exhaust system so that a gradient is established with the greatest negative pressure in the left-end cell where the dirty operations are performed.

Handling Irradiated Fuel-Specimen Capsules

By J. H. KITTEL
Argonne National Laboratory
Lemont, Illinois

HANDLING irradiated fuel-specimen capsules is complicated by (1) the high-level hard-gamma activity (typically, 1,000 curies of fission products and 100 curies of 65-day Zr) and (2) the chemical hazard associated with NaK.

After capsules are placed in a high-level cave, the monitor foils are removed; they are usually wired in or held in with a cotter key. Since the foils are not highly active, they are taken from the cave and handled with low-level shielding.

The capsules can be opened, leaving the specimens undamaged and the NaK in the capsule, by means of a remotely controlled chuck and milling cutter. The capsule is held vertically in a chuck that is opened or closed by a solenoid-actuated ratchet. The chuck is rotated at a few rpm while an independently powered milling cutter cuts through the capsule wall.

However, certain difficulties may be encountered. It is difficult to keep some of the large number of radioactive chips from entering the chuck. Also, for adequate ventilation, the entire apparatus must be placed in a hood; this hampers the use of manipulators.

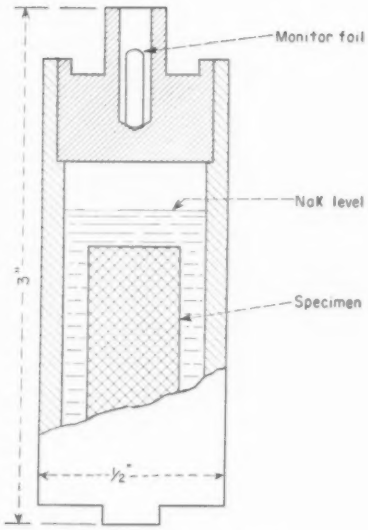
A vertical-bed lathe recently made available permits using a small ventilated Lucite hood around only the cutting tool. The operation, involving a metal guide rod of capsule diameter, is as follows: The hood is lifted until the metal rod, held in the tailstock, projects through a leather oil seal in the bottom of the hood. With the capsule in the lathe collet, the rod is lowered until it is in contact with the top of the capsule. The hood is pushed down until the bottom seal is guided over the capsule. After the rod is pulled up a short distance, the cutting tool is used to open the capsule, the turnings falling into a waste receptacle. After the cutting tool is removed, the rod is moved down to the top of the capsule, the hood pushed up on the rod, the rod lifted, and the capsule removed.

Removal of the NaK from the opened capsule and the specimen within consists of reacting the NaK with normal butyl alcohol to completion, followed by rinsing with water and acetone; capsule and specimen are moved from one solution to another in a basket. The operation is carried out in a small ventilated hood. Occasional fires in the alcohol or acetone are easily snuffed out by covering the beakers.

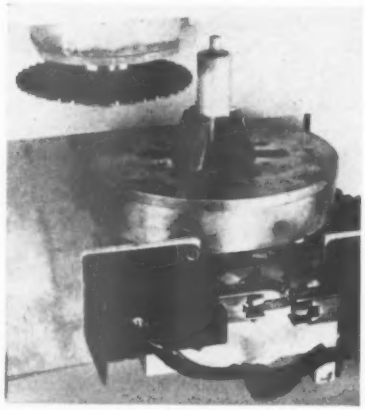
Disposal of the active solutions resulting from the NaK is best done by evaporating them to dryness in the cave and sending the dry waste to the disposal area.

* * *

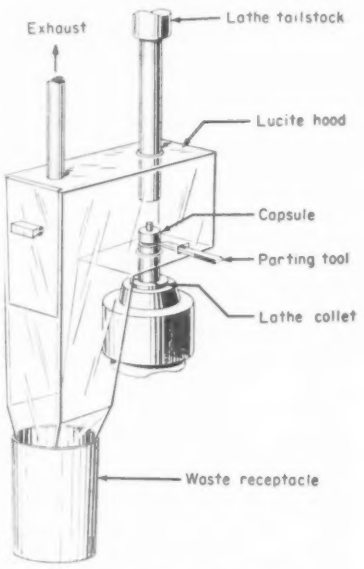
The author gratefully acknowledges the assistance received from members of the Argonne Remote Control Division, particularly N. J. G. Bohlin and R. A. Blomgren, who supplied much of the design of the capsule-opening arrangements, and E. W. Rylander, under whose direction the high-level caves were modified to accommodate these operations.



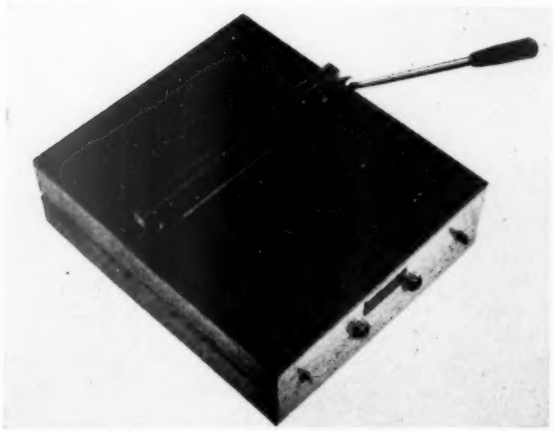
CAPSULE for irradiating fuel materials

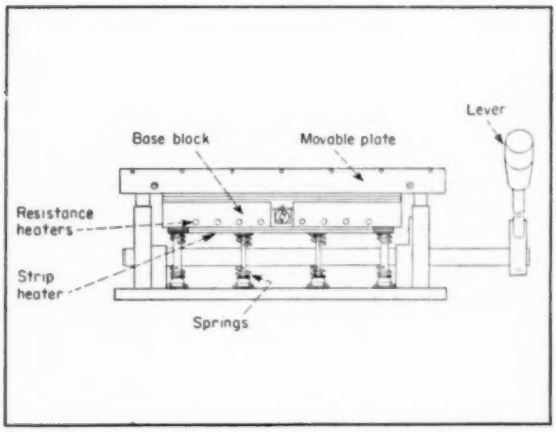


MILLING CUTTER for opening capsules



LATHE and hood for opening capsules





SIMPLE UNIT welds Vinylite sheets up to 12 mils thick; completed seal is free of pinholes

Low-Cost Plastic Sealer*

By H. SUSSKIND
Brookhaven National Laboratory, Upton, New York

In dry-box operations, it is often necessary to transfer material and equipment across a sealed contamination barrier while the seal is maintained. At one stage, this method† requires that a seal be welded completely across the width of a Vinylite sleeve attached to the enclosure. Since commercial sealing units were not suitable, a low-cost resistance heat sealer was constructed.

The sealer utilizes both heat and pressure to effect a good seal in less than 20 sec. The basic unit consists of two copper sealing jaws—a base block and a movable plate. The block is heated directly; the plate receives heat by conduction.

Heat is supplied to the sealing jaws by a 125-watt Calrod strip heater mounted directly below the stationary block and eight 23.5-watt Ungar No. 535 heaters imbedded inside the copper block. A Fenwal thermoswitch is also imbedded inside the block. With strip heater in addition to the regular heaters, warmup requires 8 min. At the 160° C operating temperature, the regular heaters alone supply the heat; the thermoswitch maintains constant temperature. If a large number of seals are made in rapid succession, the strip heater is placed in the circuit again.

The $1 \times 1\frac{1}{4} \times 10\frac{3}{4}$ in. base block is mounted on four Danley No. 9-1208-11 springs. These are fastened to an aluminum base plate by means of Amphenol blocks. The movable $\frac{1}{8} \times 1 \times 10\frac{13}{16}$ in. plate is connected with aluminum dogs and keys to a lever arm; when the arm is lowered, the jaws are brought in contact. Plate motion is guided by two aluminum rods, which slide inside brass sleeves. When the lever arm is raised sufficiently, the plate is disengaged and may be removed entirely.

Both sealing jaws are insulated with asbestos board; the movable plate is surrounded with phenolic resin panels to facilitate handling. A Dow-Corning XR-671 silicone film is baked on the polished sealing surfaces for 15 hr at 450° F. This film prevents the Vinylite from sticking to the copper during sealing. The surfaces can be cleaned with alcohol or carbon tetrachloride without damaging the film.

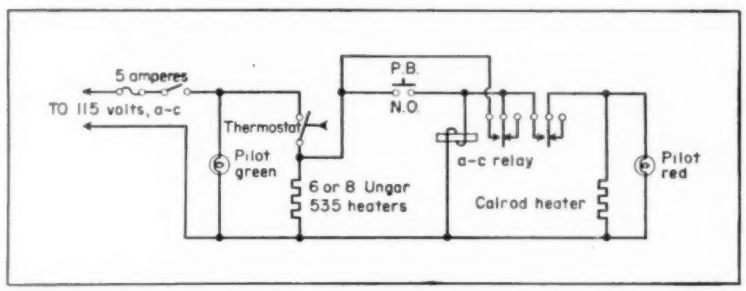
The whole unit is mounted in a wooden box covered with heat-resistant Bakelite panels. Only the top of the copper block protrudes above the panel, and its top surface is flush with the panel when pressure is applied through the movable plate. This prevents creasing or wrinkling of the plastic sheets during sealing.

* * *

Thanks are due to W. A. Higinbotham and R. L. Chase for their helpful suggestions and R. V. Dvorak for constructing the unit.

* The work was performed under the auspices of the U. S. Atomic Energy Commission.

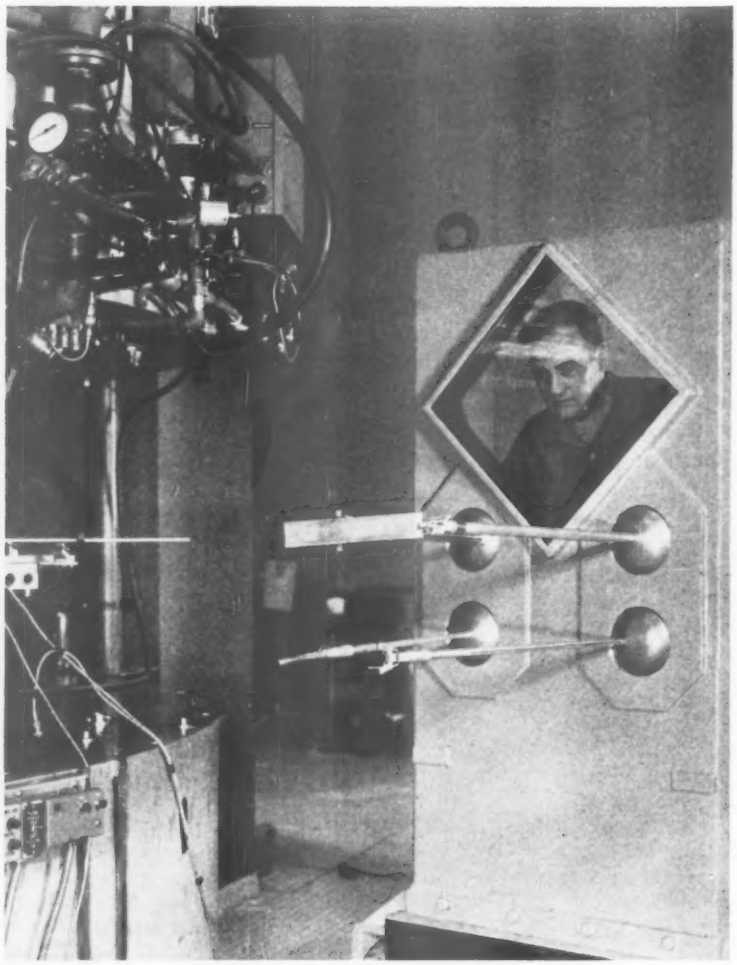
† W. A. Hartman, AECU-198 (1949).



HEATER CIRCUIT for plastic sealer

Mobile Shield for Cyclotron Target Removal

By R. A. BLOMGREN
and N. J. G. BOHLIN
Argonne National Laboratory
Lemont, Illinois



MOBILE SHIELD, 10,000 lb, is 47 in. wide, 58 in. long, and 81 in. high. Shield is removable from chassis. Upper manipulator balls are for cyclotron target manipulations; lower position is more desirable for 36-in.-high laboratory-table setups. Center of gravity of unit is 9 in. back from front-drive-wheel centerline and 36 in. off floor, permitting safe braking at full speed

To REMOVE a cyclotron target and to carry personnel to the target area while the magnet is on, a 4-in.-lead mobile shield with $\frac{1}{4}$-in. nonmagnetic stainless-steel facing plates was constructed.

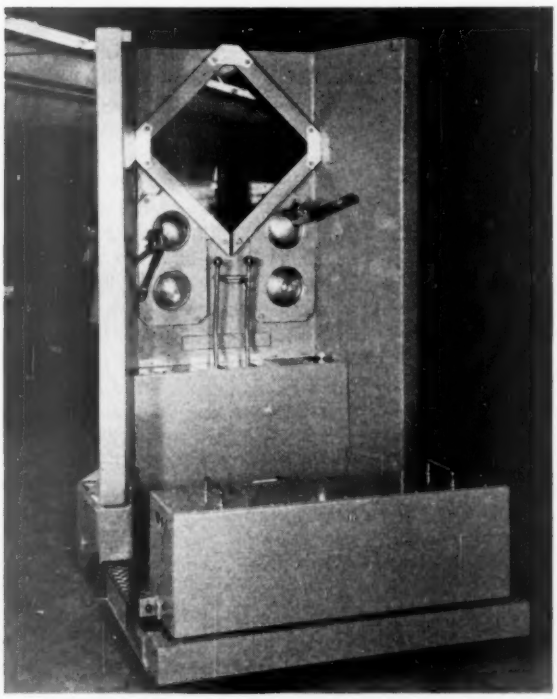
The window consists of seven low-reflection-coated 1-in.-thick pieces of 6.2-density lead glass spaced by $\frac{1}{32}$-in. Koroseal gaskets. Outer face plates are $\frac{1}{8}$-in. plate glass; openings are caulked with lead wool and lead spacers.

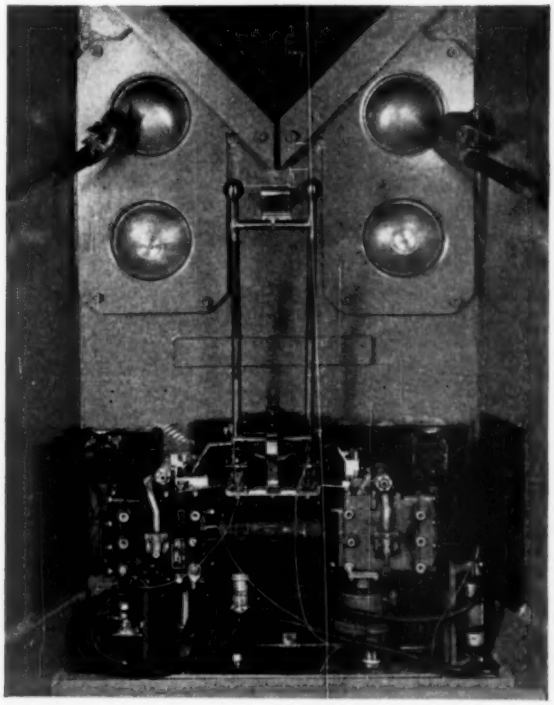
The following radiation-scatter tests used a 2.8-curie Co^{60} source 3 ft from the shield and $5\frac{1}{2}$ ft off the floor.* The operator stands on the chassis platform 9 in. off the floor. At the operator's head, scatter intensity is less than twice the shield-transmitted intensity. A person standing behind the chassis and shield, 8 ft from the source, receives 5 × the shield-transmitted intensity. With the shield 2 ft from an 8-in. cinder-block wall, intensity at the edge of the shield wing is increased by a factor of 4. If a source were closer than 15 in. to the floor, there would be considerable leakage at the front-wheel axle. This could be filled in with plastic-lead mix.

Hand controls for propelling the chassis are below the window. One hand can control both front drive wheels independently for steering. The shield pivots on either wheel as a center by moving the hand lever in the direction of turning, either forward or reverse. By separating the hand controls for each wheel, driving in opposite directions at approximately the same speed, the shield rotates about the center of the shielding wall. Speed control for each drive wheel is 0–25 rpm; normal operating forward or reverse is 5–80 ft min. Power should be sufficient for a 10% grade.

The drive handles are completely disengaged when the motor is not running, allowing the operator to push them forward and lock them out of position. The handles can be pushed down only in the neutral position, which starts the motor regardless of which handle is pushed down. Both must be pushed down to engage the speed-control

* Measurements made by K. R. Ferguson and L. M. Safranski of this division.





SHIELD accommodates two observers and one person to manipulate tongs. Shielding roof was not provided because cyclotron magnet is low enough for protection. Motor (right), 24 volts d-c, develops 3.3 hp before hydraulic relief valves set at 1,200 lb/in^2 bypass oil to prevent overloading. Two Vickers hydraulic transmissions are controlled by valve and booster pump system from constant displacement pump input to variable displacement hydraulic motor output. At full speed on level floor, 60–70 amperes are drawn from batteries

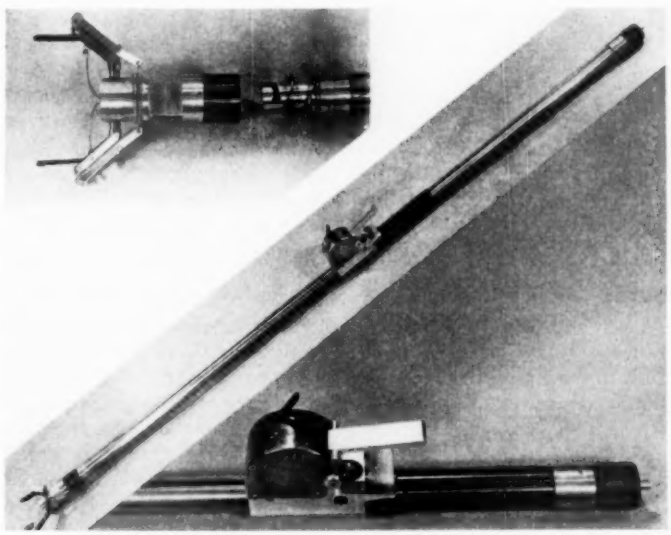
valve on the transmission. Releasing the handles brings the valves to zero and shuts off the motor. The drawbar pull to move the shield on the level concrete floor with the drive wheels disengaged is 350 lb.

The 8-in. brass balls, used in the manipulator ball-joint sockets, are cast into an inexpensive high-density shielding material.† This material has a density of 515–525 lb/ft^3 and at 1.3 Mev is 1.25–1.3 times as effective as an equivalent thickness of low-carbon steel. It dries in 8 hr and develops 2,500-lb/in^2 compressive strength in 30 days. By rotating parts, e.g., brass balls, occasionally, sticking is prevented during hardening of the cement. Coating the rotating parts with wax to fill pores is advisable.

* * *

We are grateful for the design layout and detail suggestions made by members of the Remote Control Engineering Division and C. S. Kipfer of Central Shop Engineering.

† Material developed in cooperation with C. Bullinger of Central Shops Engineering.



BALL-JOINT MANIPULATORS, with removable tongs, can be inserted in any of the four 8-in.-diameter brass balls. Tong head, having parallel-acting jaws, can be tilted 40 deg each side of control-rod axis. Jaws must be horizontal to disconnect head. Handle, which can be adjusted along length of control rod, is controlled by thumb or palm action. Control lever can be engaged for ratchet locking the jaws to hold object. Head is held to control rod by ball lock

Binocular Periscope Viewers

By J. M. HOLEMAN
General Electric Company
Hanford Atomic Products Operation
Richland, Washington

SOME ATOMIC-ENGINEERING applications require binocular viewers to prevent fatigue in prolonged observation or to provide depth perception.

If the only requirement is the use of both eyes, a monocular periscope can be fitted with a beam-splitting binocular eyepiece. The average Hanford monocular periscope has a 20% light efficiency. The theoretical maximum efficiency of a beam splitter is 50%, but actually seldom exceeds 35%. Thus, each eye sees 7% of the object's original brightness. The psychological effects arise from the fact that the eyes are accustomed to seeing two different images; identical images of spatial objects, especially in motion, can cause headache or other symptoms.

Stereoscopic Periscopes

The binocular stereoscopic periscope is called for when three-dimensional observation is essential. The instrument must provide two different images in which the accommodation (focus of the eye), convergence ("toe-in" of the eyes when viewing close images), and magnification are in the same relation as they are in unaided vision. If these conditions are not preserved, the user may suffer from eyestrain, fatigue, vertigo, nausea, irritability, nervous tension, or irrational behavior.

Periscope Construction

Obviously, a stereoscopic periscope can be made with two identical monocular instruments placed side by side. As additional requirements, the images must be alike in magnification within ¼%, show the same degree of erection within a degree, and be aligned vertically and horizontally within a few minutes of angle. We have had great difficulty in securing images capable of binocular fusion. There is so much variation in the eyes of different persons, that an adequate adjustment for one may be intolerable for another.

For the last three years, we have confined our designs to single-tube models in which one set of lenses serves both eyes. We have investigated two of these in some detail.

Full-Aperture Systems

The simplest single-tube case is the full-aperture system in which each eye uses the full aperture of the periscope system, but the two images are separated by phasing them in some manner.

This may be done mechanically by a rotating or oscillating mirror that selects the right or left image at the objective end and sends it down the periscope to another synchronized selector at the eyepiece that sends the image to the proper eye (the flicker system). The models that have been built all suffered from image vibration, stroboscopic effects, and image-coincidence problems.

A nonmechanical system separates the images by polarization, avoiding the mechanical problems of the flicker system. However, it is difficult to keep the two images from depolarizing and becoming confused by the periscope lenses and mirrors. Actually, this system has a good deal to recommend it if a light efficiency as low as 6% and slight ghost images can be tolerated.

Partial-Aperture Systems

Another means of taking two images through one lens system is to run the images through different portions of the glass or at different angles so that the rays are never confused.

Practical problems have forced us to adopt a system where two circular areas, each half the lens diameter, carry the image; the remaining area is not used. We have succeeded in producing a workable instrument with the following properties:

1. Magnification—variable from 1 to 10×.
2. Length of instrument—15 ft, could be much longer if required.
3. Stereoscopic effect—poor at low power, normal at 3×, exaggerated at higher powers.
4. Depth of field—practically infinite at powers less than 3×.
5. Working distance—about 3 ft.
6. Diameter of instrument—about 7 in.
7. Cost to build locally—$4,500.

The cost of a comparable monocular periscope would be about a quarter as much, and it would have a diameter of about 3 in.

Another model has been made with the same general properties, except that the magnification is 6–40× and the working distance is 2 ft.

Besides meeting the optical requirements, this instrument is mechanically simple to build, has no delicate adjustments, and the two images cannot get out of alignment. Anyone with normal vision can use the instrument.

The basic element, the "Opton" stereoscopic microscope made by Zeiss, contains a single large objective lens, which converts light rays from the object to parallel rays. These rays are partly picked up by two small identical erector lenses, offset by prisms, and observed in matched oculars. Basic magnification is 16×.

To vary the power, two pairs of reversible afocal telescopes are inserted between the objective and the erectors. By means of a rotating cylinder, the telescopes can raise the power to 20 or 40× or lower it to 10 or 6×.

Although it is possible to use a Greenough-type stereo microscope, the 15-deg angle of convergence between the two optical systems causes a complication. Two parallel systems are easier to handle through a relay system.

The relay system consists of a pair of large achromats that pick up the image and transfer it to a distant point. An objective lens forms the original image for the relay system; specially designed field lenses are required at every image plane to control the edge rays. The complete installation involves quite a few lenses, many 5-in. or larger aperture.

The instrument's inefficiency lies in the fact that the full aperture of the relay system is not used—only two circular areas carry light. However, we have obtained sufficient exit pupil and illumination for our purposes by using lenses under 6 in.

HOT LABS

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Advantages of Ultrasonic Cleaning

By M. J. FELDMAN
*Oak Ridge National Laboratory**
Oak Ridge, Tennessee

NONDESTRUCTIVE sample cleaning is a necessary step in many hot-cell operations. The more precise cleaning specifications become the more precise and usually the more complex the cleaning equipment becomes.

Maintenance time of equipment is roughly proportional to its mechanical complexity. Since equipment maintenance is a major factor in cell efficiency and personnel radiation safety, it is worth while to decrease the maintenance potential of hot-cell apparatus.

Advantages

Using ultrasonic cleaning can do away with part of the mechanical complexity usually necessary. While mechanical and electrical complexities cannot be compared, it is unnecessary in this case, as the electronic generator can be outside the cell.

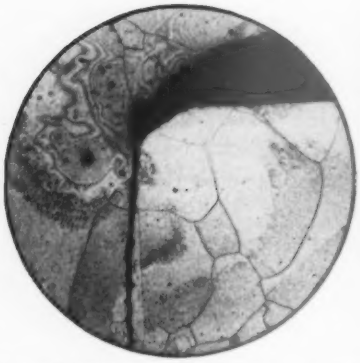
Investigations into the use of ultrasonics gave the following points:

1. Focusing of cleaning action is very simple.
2. The only mechanical motions are those of transporting the sample through the cleaning area.
3. Because the prime cleaning is by cavitation and the useful turbulence is subtle, the problem of spray and splash contamination is minimized.
4. The transducer is applicable to many sample shapes.
5. If duplication of cleaning is necessary, all units can be run in turn by one generator. Over-all economy results.
6. The transducer is easily portable.
7. By correct choice of cleaning solution, the transducer can be directly submersed without electrical insulation.
8. Distillation rather than filter systems can be used for purifying the cleaning solution. Distillation can remove dissolved oil, as well as suspended abrasives.
9. Because the transducer must be submerged in the cleaning liquid it is necessary to work with a solution diluted with sample contaminants.
10. Unless the sample is sprayed or bathed in clean solution, there is the

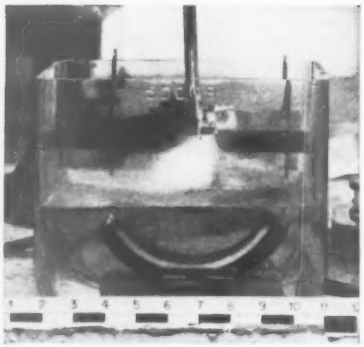
Transducer Types

Four transducer shapes are available for use. The flat plate produces the largest usable volume of cleaning action but is not focused for maximum cleansing. The spherical section has an intense focal area, but usable cleansing action is restricted because of the point focus. A radial section of a cylinder has a strong linear focus, which allows longer cleaning time on a continuously moving sample. Basically most acceptable is the cylindrical form that has a line focus and 360° cleaning action. It is not yet available in diameters large enough for this particular sample. One disadvantage of large cylinder may be that frequency it will respond to would be within high end of audible range, and therefore unsatisfactory for personnel.

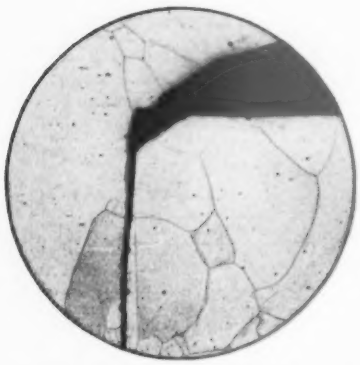
* ORNL is operated for the Atomic Energy Commission by Carbide and Carbon Chemicals Co.



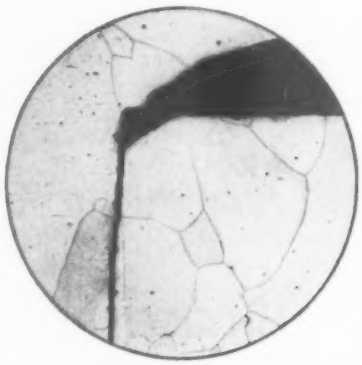
1 ULTRASONIC CLEANING in hot cells is demonstrated on this sample of Inconel (50×), etched with Modified Marbles Reagent. Stain came from entrapped oil in 0.0007-in. separation between sections, was removed by simple form of .



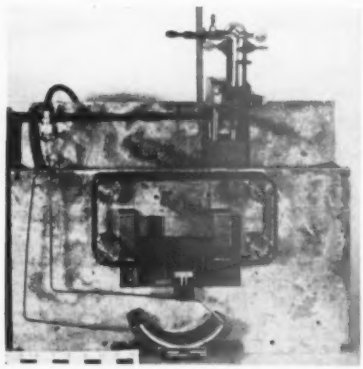
2 CLEANING CELL, consisting of ultrasonic transducer immersed in cleaning solution. Transducer used is 3-in. length from a $\frac{1}{3}$rd section of 6-in. cylinder. Set-up is inexpensive, easily portable, and virtually maintenance free; wide usage is predicted. Treating sample by . . .



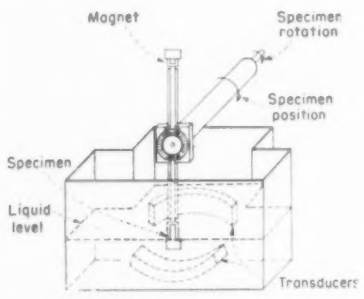
3 IMMERSION for 30 sec in ultrasonic cleaner produced results shown here. Very faint stain remaining at the separation edge was removed by . . .



4 EXPOSURE for additional 3-min period, showing abilities of this cleaning method. Usually this step would be superfluous. More elaborate . . .



5 CELL DESIGN uses two transducers placed at 90 deg to each other. Unit has magnet (ground for four-point contact) holding specimen. Because side facing upper transducer gets more thorough cleaning, magnet is attached through bearing and pinion; rack section in bath slowly rotates magnet. In another unit an . . .



6 ALTERNATE DESIGN is used for sample transport. Outer cylinder positions specimen, inner one rotates it. Because of its compactness and simplicity of operation, this unit will be tested

possibility of some contaminant adhering as the sample emerges.

Ultrasonic Unit Design

The technology of ultrasonics is well stated in the literature (*1–4*). Our specific application is cleaning metallographic specimens before microexamination. Its stringent requirements cover the criteria for most remote cleaning operations.

Processing the samples requires that a coarse grade of polishing media and its vehicle be removed before proceeding to the next finer abrasive. Originally a mechanical cleaner (*5*) was used. Replacement was considered after considerable use because the cleaner was a pilot model. Estimates ran $5,000–6,000, and the many cams, gears and motors gave a high maintenance potential. At this point, ultrasonics was considered.

After selecting a pair of cylindrical-section transducers,* various transducer positions and transport configurations were tried. Figure 5 shows the most successful of these.

The cleaning action of the ultrasonic unit is adequate for our purposes. Tests at our laboratory and at the Branson Instrument Co. and the Brush Electronics Co., have shown other advantages in ultrasonic cleaning. The first is the unit's ability to remove oil and abrasive from the extremely fine voids and cracks at the sample-Bakelite interface. Abrasive trapped in these inaccessible areas is not a problem, but entrapped oil would occasionally, upon etching, make itself known by staining the sample. A second advantage is the removal of stains from etched samples. This ability is presently being used, as shown in Figs. 1–4.

From our experience to date with ultrasonic cleaning, we feel it can be a very useful and economic addition to hot cell operations.

* * *

I wish to acknowledge the valuable assistance of M. G. Willey, engineering dept., ORNL and R. Hawkins, Pratt and Whitney Aircraft Co., on many of the mechanical design problems of the ultrasonic specimen cleaner.

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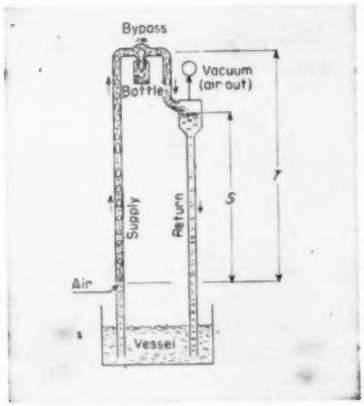
* Supplied by Branson Instrument Co.

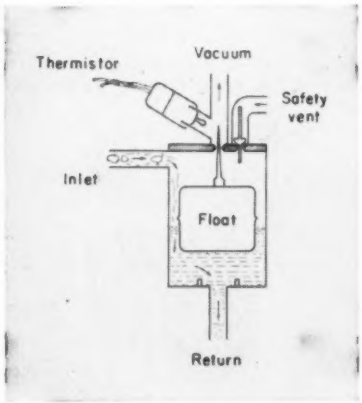
Remote Liquid Sampling: A Completely Automatic Air-Lift System

Air-lift sampling, chain conveyor transportation are used in first large-scale sampling system without personnel exposure from time of sample taking to lab delivery

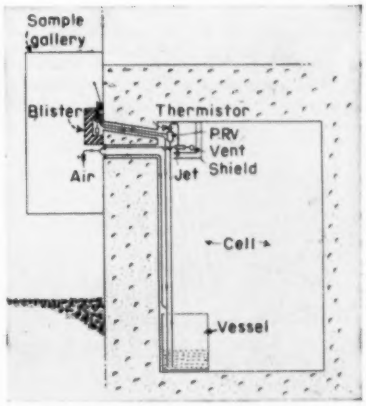
A. PUMPING



1 AIR-LIFT SAMPLER operates without injection nozzles, against considerable resistance. Therefore, S/T ratio must be held close to 1, rather than conventional 0.4–0.7. Air-lift pumps against 2–51 ft head. To prevent liquid from entering vacuum source, S must be less than T; special valve does this



2 PRESSURE-REGULATING valve maintains constant return-line level. If float rises, it constricts opening, increasing back pressure until level drops. If lift-air/vacuum ratio drops seriously, float raises safety-valve stem—admitting air, producing back-pressure. Thermistor shuts off sampler if float fails



3 AIR JET inside cell provides vacuum source to remove air. Single valve controls air to both jet and air-lift. This eliminates possibility of pressurizing loop by starting the air-lift without a vacuum removing the air. During operation, sampler circuit is under negative pressure at all times

By H. G. DUGGAN and J. W. LANDRY
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Oak Ridge, Tennessee

PROCESS-STREAM SAMPLING is a major phase of radiochemical pilot-plant operation, for it is chiefly by sample analysis that the process variables' effects are followed and accountability satisfied. Remote sampling is necessary to prevent radiation exposure. This paper describes the system devised for taking 40 samples simultaneously and conveying them 125 ft to the analytical laboratory. Tests have shown it reliable and easy to operate.

Sample Source

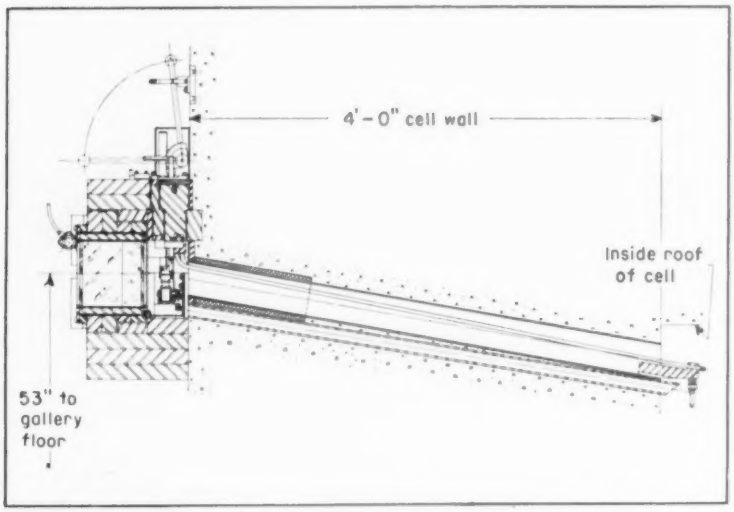
The ORNL pilot plant is experimenting with a process in which 40 liquid samples are taken. Half of these come from tanks and the rest from flowing streams, such as pipes. The equipment is isolated in concrete cells where radiation prohibits entry; samples are drawn through pipes and bottled in a shielded sampling gallery. Process vessels are positioned at various levels in the 27-ft cells. Solutions vary in specific gravity from 0.8–1.6.

Criteria

Several criteria were established for both the sampler system and its me-

* ORNL is operated for the Atomic Energy Commission by Carbide and Carbon Chemicals Co.

B. PIPING



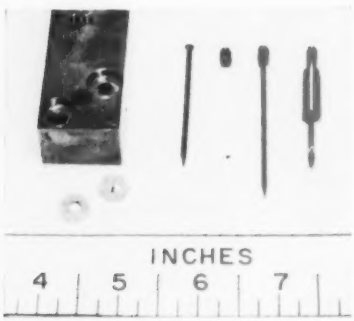
4 SAMPLING BLISTER cross section shows 6-in. shielding of tack-welded steel plate, lead-glass door window, sample bottle in its cart, handle for lowering sample connectors into bottles, and blister to hot-cell piping

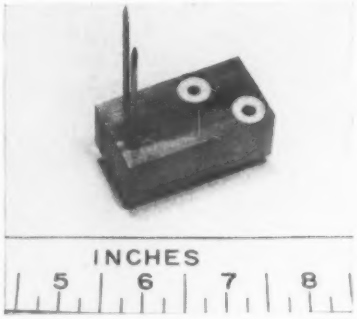
Why Individual Vacuum Sources?

A. To prevent the possibility of the air-lift being operated without the vacuum source, a common valve is used to control both air streams. To enable operation of single samplers, individual vacuum sources had to be used.

B. The vacuum must be limited to the needs of the particular sampler for good operation of the pressure regulator valve.

C. It may be necessary to discharge the lift air back to the originating vessel to prevent the possibility of radioactivity leaving the loop if the pressure regulator valve and thermistor both fail.



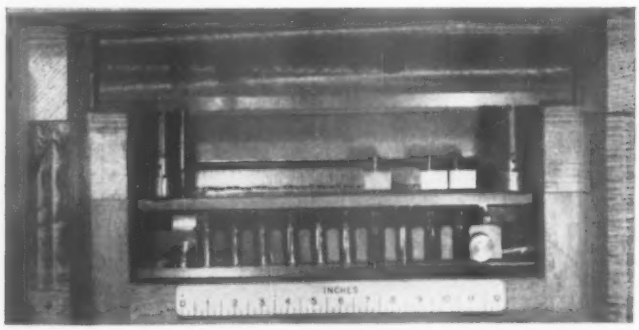


6 REMOVABLE NEEDLE-CLIP holds 16-gauge hypodermic needles with ferrule-type screw. Needles connect to supply and return lines through internal passages in clip. Bypass channel joins passages and liquid may be recirculated without taking sample; negative pressure in loop prevents needles from dribbling. Clips are mounted on ends of supply and return pipes, sealed with Teflon gaskets. Special tool is used to replace clip if needles clog or bend

chanical components: minimize hold-up and rinse volume, return rinse solution to process, do not use ordinary commercial pumps, minimize radiation exposure, minimize equipment contamination, provide direct viewing of operations, provide reliable operating mechanisms, keep construction and maintenance costs low.

Because much larger volumes are required for rinsing than as samples, a recirculating system was adopted. The rinse must be returned because it is both radioactive and valuable, mate-

5 TUBE BUNDLE (between blister and hot cell) is lowered $2\frac{7}{16}$ in. to make sample bottle connections. Inlet-outlet piping pairs have threaded hole in center that holds clips



7 SAMPLE BOTTLES are held in cart under tube bundle. Three needle-clips are attached and delivering samples. Tube bundle is in down position. Mockup blister is shown; actual steel blister reduces external radiation to 10 mr/hr at surface

Why Not Jets for Pumping?

Several factors entered the decision against using jets to move the sample stream:

Jet clogging is caused by debris in the stream—as it tends to collect in the jet—and by crystal formation in the jet throat as jets evaporate and cool certain solutions.

Air-operated jets generate aerosols that are difficult to de-entrain.

The large air flow that is introduced when the mixture is returned to the vessel has been known to upset process hydraulics and, in fact, form aerosols in vessel condensers.

Steam jets do not cause aerosols, but the aqueous dilution of solutions is often objectionable.

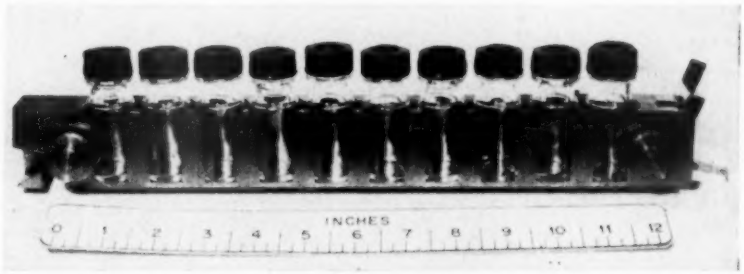
rial balances must be kept, and depletion of flowing streams would interrupt the process.

System Design, Operation

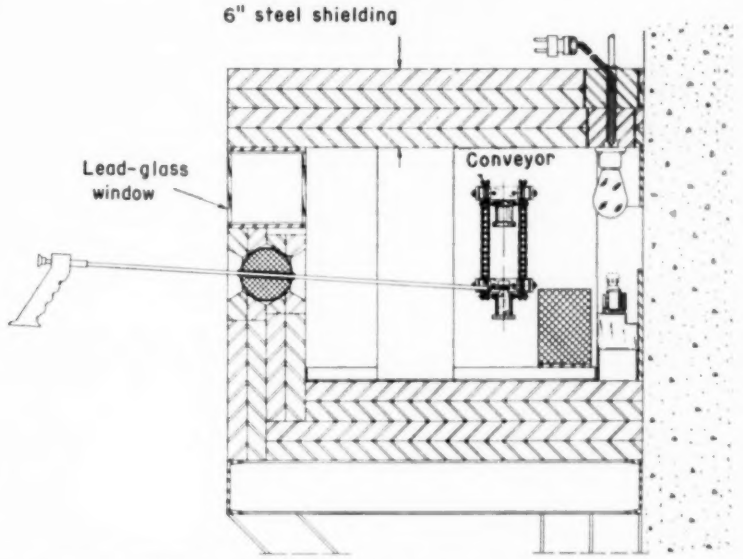
Recirculating air-lift sampler. In the sampler an air-lift is used to draw solution through a supply line to the sample bottle. Return is by gravity. Piping is arranged with source at bottom and bottle at top, without siphon or gravity drainage of the bottle. Figure 1 is schematic; Fig. 3 shows actual layout of the sampler. Liquid level in the return line is critical; if too high, liquid enters the vacuum source; if too low, the lift does not operate. To maintain constant level, a special valve (Fig. 2) is used. Air-operated jets supply only the vacuum; no liquid is jetted. Orifices control air flow to the jets and the lifts. The lift operates with low air flow, only that amount that passes a $\frac{1}{64}$-in. orifice at 1 atm pressure difference.

Sampling blisters. Mounted on the outside wall of the concrete cells are four sampling blisters (Fig. 4), each handling ten samples. A tube bundle (Fig. 5) penetrates the cell wall. Key unit of the sampler liquid circuit is a removable needle clip mounted on the bundle. The clip holds two hypodermic needles that constitute sample bottle inlet and outlet connections (Fig. 6). A mock up blister is shown in Fig. 7.

C. CONVEYING



8 CONVEYOR CARTS are made into four-cart train driven by chain-sprocket system. Carts automatically uncouple, one at each sampling station. Bottles are flint glass, 12-ml capacity, equipped with Buna N rubber diaphragms that needles pierce to deliver samples. After samples are taken, carts are returned to bottle station

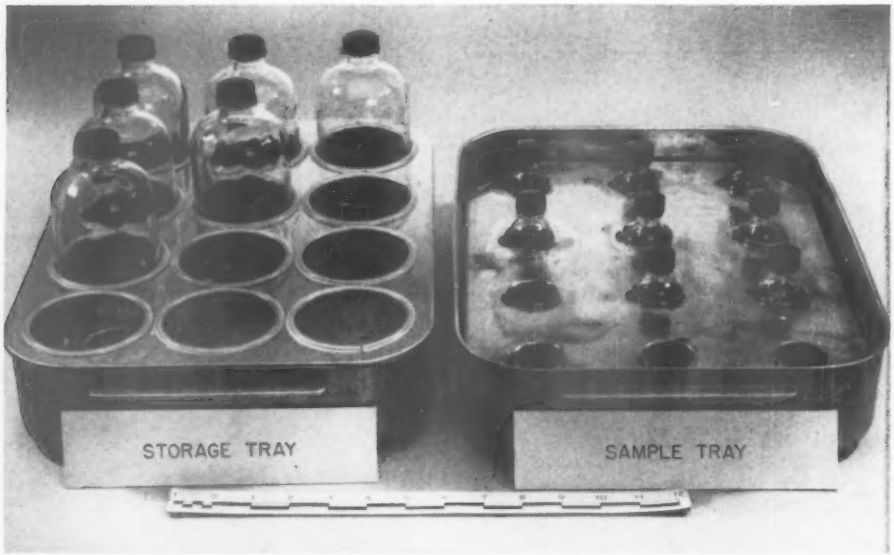


9 HANDLING STATION: ball-socket manipulators are used for bottle handling. Low activity (20–40 mr/hr at 1 cm) samples are placed in portable carriers and taken to analytical lab. High-activity samples are put in roller-chain cup conveyor and transported to lab cubicle. Handling station is divided into mutually shielded high- and low-activity zones. Low-activity zone, not shown, differs in that conveyor is replaced by a monitor

Sample transportation. A shielded conveyor connects the sampling blisters with each other and with a bottle-handling station. The system components are shown in Figs. 8 and 9. Another conveyor transports high-activity samples to the proper location in the analytical laboratory.

Conclusions

It is felt that this equipment meets all the criteria. Preliminary tests and mock-up operation indicate that the sampling system will be reliable and easy to operate. No remote bottle-capping operation is used during sampling, and the jets should be trouble-free because they pass no liquid. The needle-clip bypass insures rapid recirculation and drip-free needles. Handling of bottles by conveyors instead of by hand methods greatly reduces radiation hazards and spillage problems and improves bottle transportation. It is hoped that this system will prove to be a forerunner to further improvements and techniques used in the design of remote liquid-sampling facilities.



1 STORAGE TRAY is basic unit of sampling and storage facility. It holds twelve 500-ml bottles; die-formed stainless-steel pan ($11\frac{1}{16} \times 14\frac{1}{2}$) and perforated cover compose storage tray. Sample tray is same pan with insert to space smaller bottles. Tray bottom is plastic pad that provides friction to hold bottles during capping. Purpose of facility is storage of samples and transfer of 0.1 ml from storage to sample bottles. Trays are placed on racks in cell

Large-Scale Automatic Storage and

By T. L. TRENT, Jr. and J. J. WALLACE
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CHEMICAL CONTROL of a separation process requires that the product stream be taken off as numbered consecutive fractions and stored in an orderly fashion, so that these fractions can be sampled, their concentration determined and further processing information obtained. This procedure necessitates many repetitive operations; therefore automatic control is employed to save time and eliminate error. Design principles, objectives and implementation are presented in this article.

Basic design principles were: maximum utilization of cell volume to conserve floor space and shielding; automatic control and multiple operations to accelerate storage and sampling procedure; simplified operating controls to minimize personnel training and error.

Design and construction of the following major features was required:

1. Completely enclosed storage and sampling cells.
2. Shielded carrier for transporting bottled product from process to storage cell.
3. Equipment for selectively placing and removing bottles in storage.
4. Equipment for obtaining samples from selected bottles.
5. Cell lighting, viewing and ventilation.
6. Provision for decontamination.

Cell Design

The cell is designed around the storage-bottle tray shown in Fig. 1. Any desired tray can be sampled by setting the tray selector switches at the control panel. Electrical control system—stepping relay, limit switches and interlocks—brings the selected tray to loading position. The sampling operation that follows is described in Figs. 2 and 3. While the complete sampling cycle is normally automatic, manual controls permit deviation from the standard sequence.

This scheme provides a very compact and efficient facility. For the storage cell, a utilization factor (volume of material stored to total volume) of 16% is obtained. Removing a tray from storage takes an average of 2 min. Sampling takes about 3 min. Thus a complete cycle, including the return of bottles to storage, requires about 7 min. Sampling time per bottle is then from 0.58 to 7 min, depending upon the number simultaneously sampled.

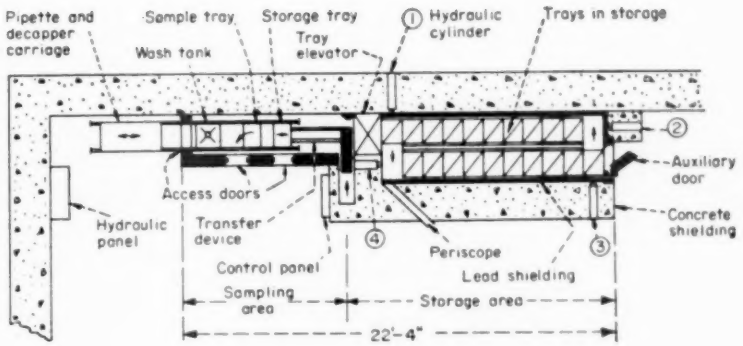
Most equipment is readily accessible for inspection or repair. Decontamination is provided for by corrosion-resistant materials and floor drains in the cells.

Exposure hazards are minimized by a completely remote operation.

The controls are so simplified that no special skill or training is required.

* ORNL is operated for the Atomic Energy Commission by the Carbide and Carbon Chemicals Co.

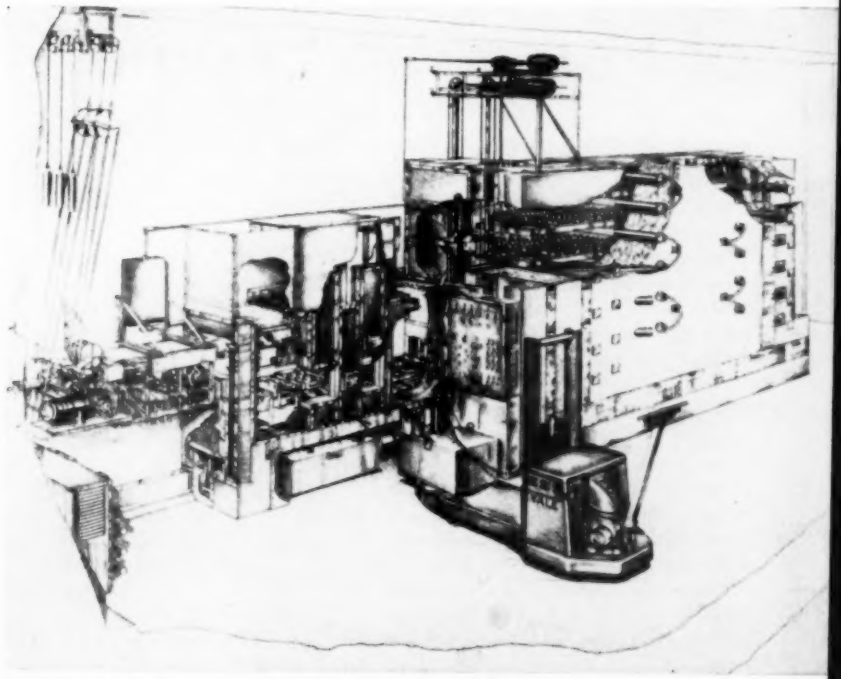
2 STORAGE AND SAMPLING cell is divided into two parts by door, allowing sampler doors to open without radiation hazard. Storage cell is 11 ft long, 3 ft wide, 7.5 ft high, accommodates six levels of bottle trays. Each level has two rows of 11 spaces, each occupied by 10 numbered tray racks, mounted on ball casters. By operating hydraulic cylinders in pairs (such as 1 and 3), desired rack is brought to loading position (nearest elevator). This signals transfer door that then opens. Tray carrier travels to elevator shaft. Elevator rises to selected level, removes tray, returns to bottom position, depositing tray on carrier that then returns to original position.



DURING SAMPLING CYCLE, track-mounted carriage holding 24 decapper heads and 12 pipetters moves to right until decappers are over storage bottles; selected heads then move down. Decapper heads rotate, remove caps, return upward retaining them. Carriage moves further to right so pipets are over bottles; preselected ones move down and obtain samples. After pipets return to top, carriage travels to left, positions them over sample bottles. Pipets descend, discharge and return. Further leftward movement places decappers over bottles for recapping. Carriage returns to initial spot, pipets are rinsed by twice pipetting wash-tank water. Carriage can be brought outside cell on extended tracks to replace pipet or for cleanup or repair.

GEAR TRAIN from single electric motor drives decapping units; vertical travel is controlled by integral air cylinder. Decapping heads have cone-shaped rubber inserts that grip caps when forced down on them. Cam-operated plunger is heart of pipetter; its displacement in mercury-filled chamber causes change in system volume. Gear train drives all cams from same motor. Vertical motion is obtained from lead screws powered by individual fractional-hp motors. Sampling carriage is driven by electric motor through chain and sprocket drive that gives accurate linear positioning. System is similar to Geneva motion for rotating mechanism in that motor starts and stops under no-load conditions. Tray carrier is powered by hydraulic cylinder

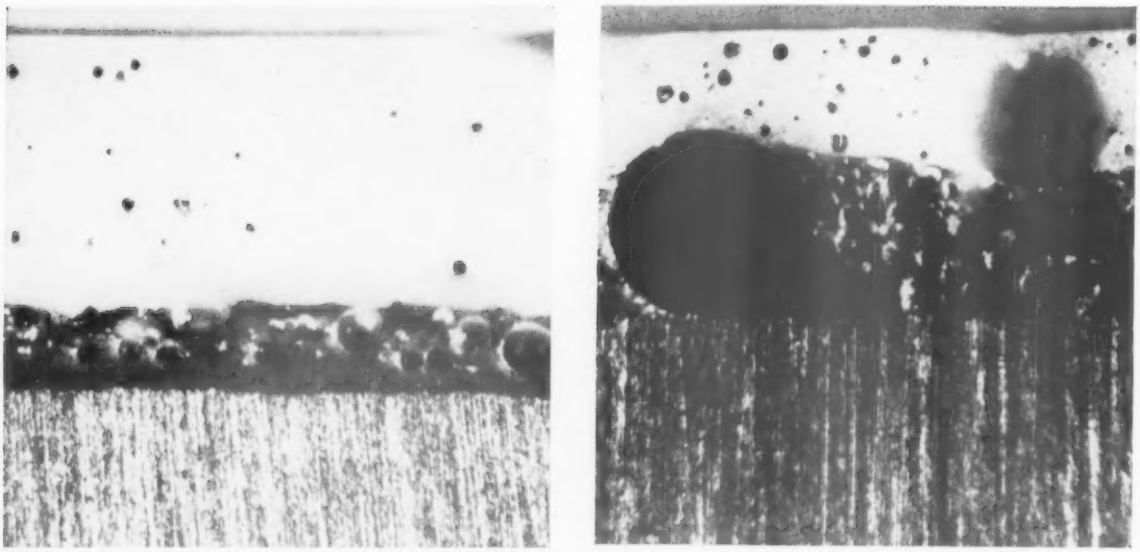
Sampling Unit



3 RACK AND PINION, CHAIN AND SPROCKET are arranged so that tray-carrier travel is six times as much as hydraulic cylinder stroke. Electric brake motors above cell power elevator. One motor controls level by chain-and-sprocket drive; another actuates retractable arms that transfer tray racks to tray carrier.

TRUCK-MOUNTED CARRIER transports storage trays from process cell to storage cell. Carrier door is hydraulically operated from truck handle. Cell's access and transfer doors are of lead, are hydraulically operated from main control panel. Emergency access to storage area is through either auxiliary door or removable roof slabs. Lines to sample carriage pass over counterweighted pulleys that take up slack. All electrically controlled hydraulic valves are panel mounted. Hydraulic pump and reservoir are below sampling cell. Main control panel is along storage cell wall, positioned so operator can observe sampling. Signal lights indicate bottles selected for sampling, progress of operations. Limit switches and interlocks protect all equipment from interference or overtravel damage. Ventilation system (downdraft) maintains 2 in. of water negative pressure. Face velocity at openings is 100 ft/min, with all doors open. Exhaust air goes to off-gas stack. Crack leakage furnishes air. Scanning periscope allows view of each bottle level. Fluorescent bulbs, built into shielded plugs for easy maintenance, provide cell lighting.

STORAGE CELL WALLS are 2-ft-thick Hi-Density concrete, lined with 1-in. layer of lead and stainless steel. Sampling area walls are 6-in. cast lead in steel frames, are better than concrete for numerous openings and also for installation of mechanical control devices. Two leadglass windows allow observation of sampling



MICROSTRUCTURE of good and poor porcelain. Bubbles contained in the enamel are result of H_2 outgassing from base metal. Uniformly small gas bubbles are characteristic of good enamel (left). Shown are samples B-2 (left) and B-3 (right). 125×

Decontamination Characteristics of Porcelain Enamel

By G. W. PARKER and G. M. HERBERT
Oak Ridge National Laboratory, Oak Ridge, Tennessee*

COMPARISON of the radiochemical decontamination characteristics of porcelain enamel and other laboratory materials with high decontaminability ratings is the object of this article. Tests have shown that the susceptibility to decontamination of high quality porcelain-enameled steel is about equal to that of the reference materials. Materials tested, reagents used, study method and results are given, after requirements for decontaminable materials are presented.

Decontaminability requirements. Requirements of a good material for radiochemical decontamination have been summarized by Terrill (*1*), who also reviewed the test results and procedures of others (*2, 3*). The criteria parallel the general properties of glass —versatile chemical resistance, low absorption and chemical exchange, and freedom from surface defects and porosity. These characteristics are found to a varying degree in all porcelain enamels.

The tests were intended to simulate those of Watson, Tompkins, and others and to include materials used by them. Results could be correlated with the previous work and with some porcelain research done by other parties (*4, 5, 6*).

Materials Tested

Porcelain-enameled steel. Porcelain enamel coatings were of one principal type; commercial-acid-resisting porcelain that generally consists of a blue-black, Ni-Co ground coat and an opacified enamel cover coat that was glazed or replaced by a glaze.

In some cases, only one side had a cover coat, in others, both sides were coated. Steel thickness was usually 20 gage, enamel was about 0.005 in. thick, ground coat and about 0.015 in., cover coat. In two instances, an extra thickness of cover coat was noted; this was apparently a double coat.

White enamels are opacified by adding a few per cent of an oxide of either antimony, titanium, or zirconium during preparation of the frit (*7*). Chemical resistance seems to be limited by the opacifier, with decreasing resistance in the order given.

Visually, these enameled surfaces are quite different. Better enamels are smooth, glossy and highly reflecting. Enamel micro-structure is shown in the figure.

Glass coatings. Glass coatings (true borosilicate glasses) differ from enamels. They consist of a single homogeneous layer, applied more heavily to heavier gage steel. Because higher firing temperature is required, glass coatings are limited to mas-

* ORNL is operated for the Atomic Energy Commission by Carbide and Carbon Chemicals Co.

TABLE 1—Relative Acid Resistance of Porcelain Enamels (Surface Changes)

Material	Color	Roughness μin.—r.m.s. Profilometer reading: Before	Roughness μin.—r.m.s. Profilometer reading: Change
Sheet glass	Type B	1–2	0
Glass coating	Blue	10–15	0
	Black	11–15	0
B-1	White*	20–30	0
B-2	Black*	10–20	0
I-1	White†	15–20	0
D-1	Gray	10–15	0
D-2	White‡	8–12	0
Tile	Sanitary	18–22	0
	Building	35–45	0
D-3	Black	12–15	+2
C-1	White	10–15	+2
G-1	White	20–25	+5
E-1	White†	20–25	+5
D-4	White§	9–15	+5
I-2	Black	20–25	+5
G-2	White	13–20	+6
D-5	Black¶	9–16	+7
E-2	Blue-black	15–25	+10
F-1	White	13–30	+18
F-2	Black	10–30	+20

* double thick. † TiO_2. ‡ antimony opacified. § titanium opacified. ¶ pitted.

sive curved structures. Flat specimens were supplied by one maker.†

Uncoated reference materials. The following were used as reference materials: Saran, Teflon, Sheet glass (type B), Polythene, plate glass, Fluorothene, mirror-finish stainless steel No. 7, mill-finish stainless steel No. 2B (normal laboratory grade).

Samples of the materials tested were taken as cut from larger pieces, unscreened for flaws. Over-all agreement between samples was good.

Acid Resistance

Preliminary tests were made to establish relative acid resistance among the commercial products tested. Reagent was a mixture of 10% hydrochloric and citric acids. A watch glass was half filled (about ½ cm^3) with reagent, covered with an enamel speci-

† A. O Smith Co.

TABLE 2—Decontaminability of Porcelain Enamels and Common Laboratory Materials

Material	Susceptibility: Activity after H_2O wash (cpm × 10^3)	Susceptibility: Relative to sheet glass	Treatment*	Activity (cpm) after each wash: 1	2	3	4	True contamination remaining (%)
Mild Contaminant—10^6 cpm Applied								
Sheet glass	3.65	1.0	A	36	21	17	15	0.42
Glass†	3.07	0.8	A	218	129	89	71	2.3
Glass‡	5.07	1.4	A	163	95	68	35	0.7
I-1	3.76	1.0	A	145	85	72	58	1.54
D-1	5.39	1.5	B	222	57	26	6	0.1
D-1	5.39	1.5	C	117	49	18	2	0.04
D-2	3.89	1.1	B	110	39	19	3	0.08
D-2	5.94	1.6	C	400	93	48	1	0.03
D-2	4.01	1.1	D	183	65	9	3	0.09
D-2	3.07	0.8	C	34	3	3	2	0.09
D-3	4.71	1.3	B	1,881	1,462	1,450	23	0.49
C-1	2.38	0.6	A	15	15	14	11	0.44
G-1	4.56	1.3	A	74	39	32	15	0.33
G-1	4.42	1.2	D	89	28	13		0.14
G-1	3.82	1.1	C	36	8	11	4	0.09
G-1	6.70	1.9	B	352	95	51	7	0.15
E-1	10.92	3.0	B	2,458	1,233	1,027	92	0.09
D-4	5.31	1.45	B	877	355	248	26	0.49
D-4	5.31	1.45	C	97	27	15	3	0.06
I-2	4.93	1.4	B	85	51	41	9	0.2
G-2	8.75	2.4	B	332	171	141	12	0.1
G-2	8.75	2.4	D	26	26	12	6	0.06
D-5	6.66	1.7	B	864	288	138	2	0.03
E-2	11.16	3.2	B	1§	898	643	62	0.5
F-1	10.00	2.7	B	1,202	529	353	33	0.3
F-1	10.00	2.7	C	27	3	27	4	0.04
F-2	14.90	4.1	B	4,057	1,749	1,423	217	1.45
F-2	14.90	4.1	C	750	677	677	1	0.01
D-6	15.85	4.3	¶	13,600			37	0.2
D-6	20.59	5.6	D	4,500	2,000	7	7	0.04
D-6	11.11	3.0	C	113	19	15	2	0.01
B-3	4.71	1.3	C	85	53	58	10	0.21
Severe Contaminant—10^8 cpm Applied								
Reference Materials								
Glass‡	420	2.4	E	5,159	3,117	216	126	0.03
Sheet glass	170	1.0	E	2,516	1,280	381	15	0.01
Plate glass	230	1.3	E	3,571	1,622	457	0	0.00
Polythene	167	1.0	E	6,580	3,419	2,140	195	0.1
Stainless steel 7	144	0.8	E	1,431	484	342	137	0.1
Stainless steel 2B	849	4.9	E	26,676	17,204	11,798	196	0.49
Enamels								
D-2	346	2.0	E	9,994	5,258	1,763	88	0.03
D-1	332	1.9	F	4,963	3,755	472	244	0.07
I-1	346	2.0	F	18,910	15,872	7,033	6,223	1.8
G-1	678	3.94	F	52,666	44,752	15,029	3,004	0.44
C-1a	406	2.3	E	56,324	41,762	20,854	7,050	1.7
C-1b	678	3.9	F	163,000	134,000	14,516	4,449	0.65
B-1	230	1.3	F	10,332	8,192	320	192	0.08
B-3	3170	18.3	F	970,000	634,000	388,000	3,200	0.10

* See table 3 for reagents used. † coating, blue. ‡ coating, black. § Unexplained. ¶ One wash in nitric acid, final wash in nitric acid–ammonium silicofluoride mixture.

men, and inverted. After one hour the increase in surface roughness was gaged on a surface profilometer.‡ Changes of 2 μin. root-mean-square were barely visible. As shown in Table 1, the titanium- and zirconium-opacified enamels were consistently less resistant than those opacified with antimony.

Contaminating Reagents

Contaminating activity was selected from two different radiochemical process wastes:

Mild contaminant. Nitrate salt extraction-column waste, slightly acid-deficient, with high salt content (500 mg/ml) constituted the mild contaminant. Salts present were partly the metal ions of stainless steel. Because of the massive salt content, this material gave low retention of activity.

Severe contaminant. Nitric acid extraction-column waste of 3-yr-old fission products, 1.7 *N* in free acid, with less than 25 mg/ml solids (principally sodium and iron) was the severe contaminant used. The strong acid and lower salt content produced much higher retention, roughly inversely proportional to the weight of inert salts in the enamel.

Radiochemical analysis of these two differed slightly, but not enough to alter the results.

Decontaminating Reagents

Citric acid is the most commonly used decontaminant. Conclusion of a brief study was that 5% citric acid, 0.5 N in HCl, 0.5% Aerosol, is more effective than basic or neutral 5% sodium citrate solution. Reagents with low fluoride-ion activity (to preserve the porcelain's surface gloss) were favored. Nitric acid, ammonium silicofluoride, mixtures of the two, and a pumice-type commercial enamel polish were used. Various orders of application were tried, as shown in Table 3.

Testing Method

Contamination susceptibility. Specimens were 2-in. square plaques, contaminated by pipetting 0.1 ml of waste onto each. Plaques were then dried without heating for about six hours. They were then flushed for a minute with 2–3 gpm water, flowing across the sample rather than impinging on it. After drying, plaques were counted.

This count, known as the "susceptibility" or "true contamination," expresses the activity vaguely absorbed on or combined with the surface. Counts remaining after flushing/original counts applied × 100 equals the susceptibility factor. The susceptibility factor is only relative, as it depends more upon the mass/unit area contaminated than the specimen. Attempts to report absolute values on susceptibility factor are believed to be without basis; the factors are therefore given relative to that of sheet glass. Table 2 gives values for this factor.

Technique. Decontamination of the plaques was accomplished by hand scrubbing with two paper tissue swabs for one minute, then rinsing with water for a minute. Counting was done after air drying. Table 2 shows the effectiveness of the different reagents.

Final scrubs. To remove contamination completely, a 5% ammonium silicofluoride–5% HNO_3 solution was applied. The corrosive effect of this mixture caused prohibitive frosting of the porcelain. A similar mixture only 1% in silicofluoride seemed to be adequate and was subsequently used.

Further decontamination was obtained by using a commercial abrasive§ for the severely contaminated samples.

A reference material group was decontaminating so poorly that 5% trisodium phosphate solution was tried. It was ineffective. No further surface-removing methods were tried, although specific means, sometimes mildly destructive, are available for almost any material.

TABLE 3—Decontamination Reagents*

Treatment	*Wash 1*	*2*	*3*	*4*
A	HNO_3	$(NH_4)_2SiF_6$	HNO_3	$(NH_4)_2SiF_6$
B	HNO_3	$(NH_4)_2SiF_6$	HNO_3	mixture†
C	HNO_3	HNO_3	$(NH_4)_2SiF_6$	mixture†
D	$(NH_4)_2SiF_6$	$(NH_4)_2SiF_6$	HNO_3	mixture†
E	citric acid	HNO_3	mixture‡	enamel polish
F	HNO_3	citric acid	mixture‡	enamel polish

* Reagents are 5%, unless otherwise stated. † HNO_3 and $(NH_4)_2SiF_6$. ‡ HNO_3 and 1% $(NH_4)_2SiF_6$.

Conclusion

The very best porcelains equal true glass coatings and mirror-finish stainless steel in susceptibility and decontaminability, and are therefore superior to all other nonglass materials tested. Commercial porcelain enamels vary widely, with performance proportional to acid resistance and surface quality. The best porcelains seem to withstand, without visible damage, effective decontamination with reagents containing low fluoride concentrations. In most cases the same net result can be had with milder reagents.

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‡ Physics Research Corp.

§ Sun-Glo, Household Helps Co., Columbus, Ohio.

Hot Labs: A Market for Industry

Hot labs would benefit greatly if much of the equipment required for operation could be purchased from industry as standard items already adapted for remote control if necessary. This includes handling equipment, machine tools, laboratory test equipment, shielding, and viewing equipment. This is a growing market.

—R. T. Jones, *Atomic Power Division, Westinghouse Electric Corp.*

Interlocking Plate for Charging High Temperature, Pressure Dissolver

By F. L. HORN
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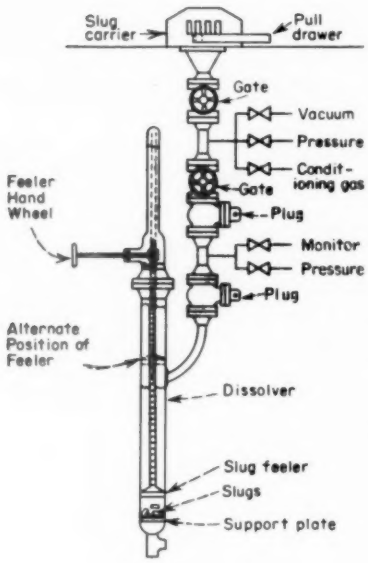
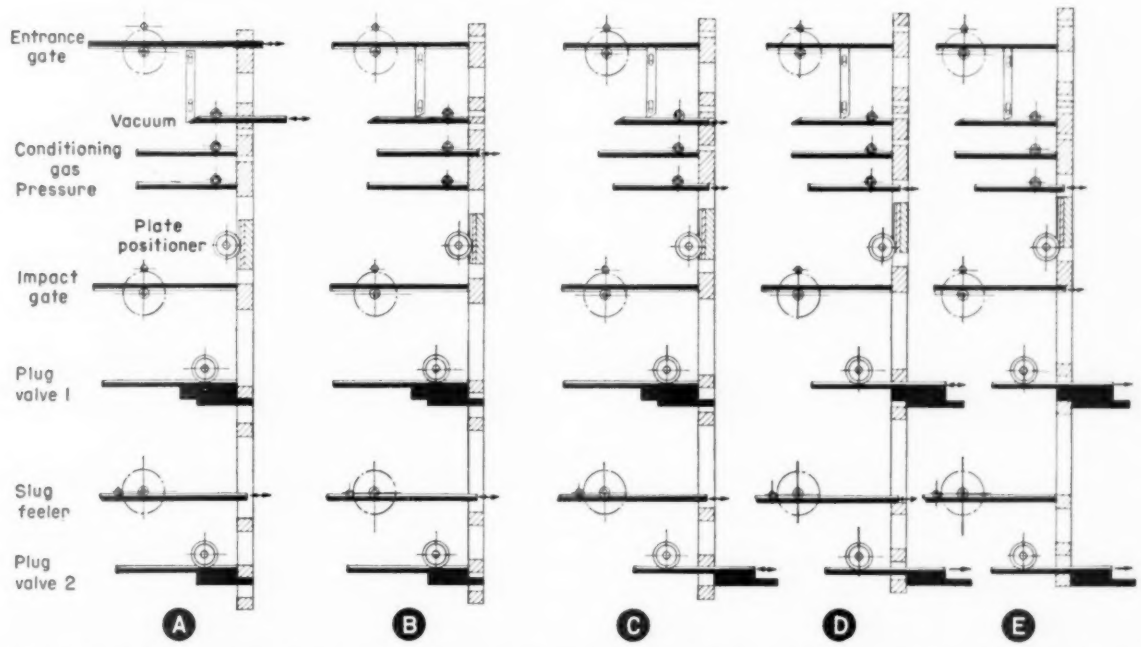
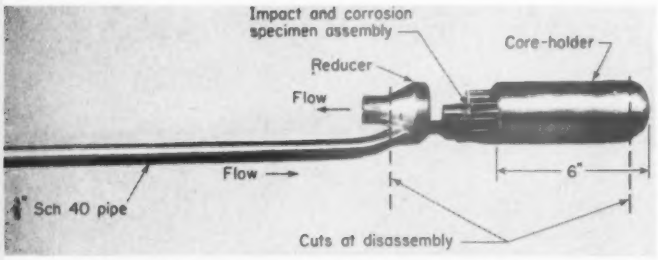


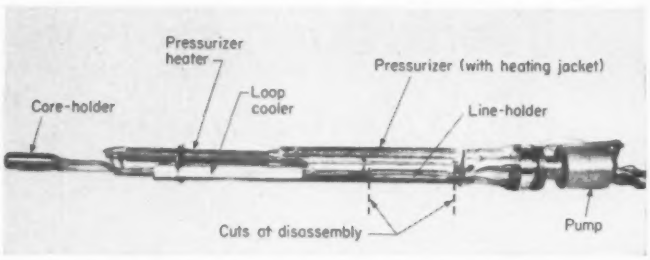
CONTINUOUS DISSOLVER operates at 200 psi, 400° F maximum. Two reactor fuel slugs per hour are charged from room conditions. Radiation requires shielding equivalent to 3-ft of concrete; charging is remotely controlled by extension handles. Slug lock (designed by Strickland and Rand of BNL) is vertical 2-ft length of 2-in pipe, with gate valve at each end. Lower gate valve acts as crash plate. Plug valves seal dissolver from lock except when charging. Slugs are released from lock by opening lower gate valve, after plug valves are open. Pressure monitoring section is maintained at dissolver pressure with He. Piping is made with increasingly larger bore to prevent slug hang-up while falling. Mechanical feeler determines height of undissolved slugs. Process sequence: drop two slugs into lock, vacuum dry, condition with a gas, pressurize lock to dissolver pressure, lock feeler in up position, open lower plug valves, release slugs to dissolver



INTERLOCKING PLATE to prevent human error was designed by Dugan and Barnett of BNL mechanical division. Seven valves and feeler are interlocked, using pinions attached to their extension handles. Pinions move through holes in master plate. Five-position selector sets master plate at desired operating step. In sequence description, valves not mentioned are locked shut. Operations are repeated in reverse sequence to ready lock for refilling. A. Filling and evacuating lock. Feeler, entrance gate, vacuum can operate. Vacuum must operate before gate can. B. Conditioning slugs. Conditioning gas, feeler can operate. C. Pressurizing lock. Feeler, vacuum, He can operate. Lower plug must be open. D. Interlocking. Feeler, pressure can operate. Lower plug locked open. Upper plug must be open. E. Charging. Feeler locked up. Both plugs locked open. Pressure can operate. Lower gate can operate, drop slugs



1. **IN-PILE CIRCULATING LOOP,** to study effect of radiation on corrosion, circulates 5 gpm of an enriched fuel. Core-sample holder (positioned at core, *i.e.* highest flux) contains both corrosion and impact specimens. Disassembly of complete loop after reactor exposure includes removal of core-holder at small neck of reducer (pipe is also severed). Core-holder is part of . .



2. **COMPLETE LOOP ASSEMBLY,** shown before being insulated. Fuel flows from pump to core-holder, back through line-holder (specimens at point of lower flux, so that effect of radiation on corrosion can be determined), back to pump. Other equipment is used to control line pressure and temperature. Pump is disconnected as a unit. Loop is sealed inside the . . .

In-Pile Circulating Loop Is Dismantled with this Equipment

By L. N. HOWELL, A. M. TRIPP and D. T. JONES
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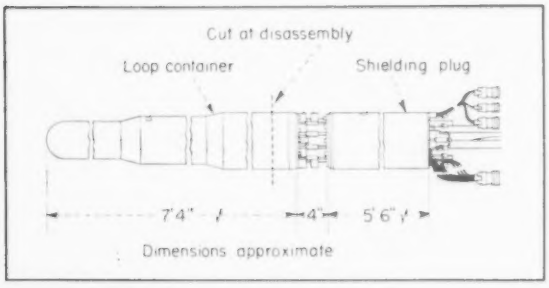
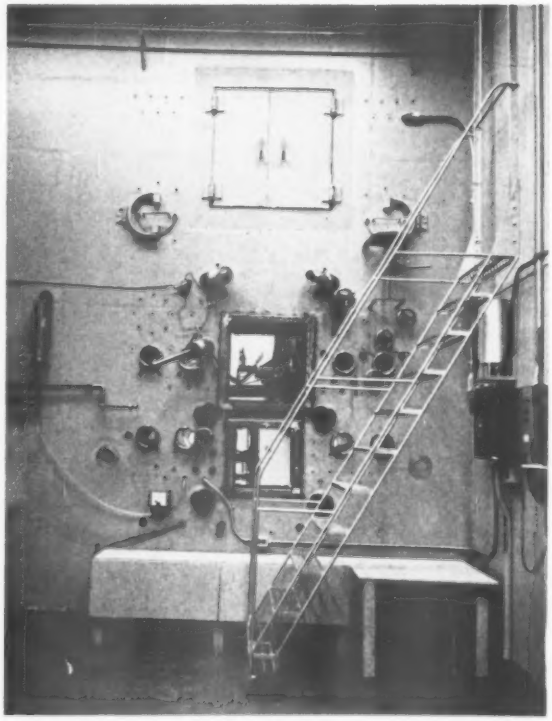
Oak Ridge National Laboratory
Oak Ridge, Tennessee



3. **LOOP CONTAINER** that is connected to shielding plug and installed in an experimental hole of LITR. After desired exposure, loop is disconnected, drained, flushed, and withdrawn from reactor into a cylindrical carrier with 8-in lead walls, and taken to . . .



4. **HOT CELL** for dismantling. Operating face has abundance of 1-in. and 2-in. sleeves, two large zinc-bromide windows, eight 6-in. zinc-bromide port holes, and six periscope holes. Control and service lines occupy some sleeve holes. Main entrance is normal-size four-way split lead door. Usual hot cell services—hot drain, metal-recovery drain, hot exhaust, vacuum, air, water, and electricity—are provided. Cell is 14-ft high, 6-ft deep and 8-ft wide. Walls are lined with $\frac{3}{16}$-in. stainless steel. Access from roof is through several sleeves and two removable plugs that have sleeves. Loop carrier is up-ended on roof, over . . .

MATERIALS AND FUELS for liquid-fueled reactors are objects of present research. As part of this program, the effects of radiation on corrosion are being studied. This article describes the operation of disassembling a circulating loop that has been exposed in a reactor (LITR).

The loop is described in Figs. 1–3. Dismantling is shown in Figs. 4–6. Radiation causes this rather simple operation to become a major undertaking, carried out in a hot cell.

By the methods described, the sample holders are freed from the rest of the loop, washed, dried, and placed in carriers for transport to another cell, where additional disassembly, defilming, weighing, photographing and metallurgical examination is done.

Disk Grinder

The grinder used in the cutting operations has a 5-hp motor with a spindle speed of 3,450 rpm. A reinforced-Resinoid abrasive disk, 12-in. diameter by $\frac{1}{8}$-in. thick, is used. This disk has an unusual ability to withstand breakage from shock and bending. To make disk changes necessary from normal wear, a disk changer has been provided. It is manually operated. The disk is changed without viewing the operation. A reserve supply of about eight disks is loaded before hot-cell operations begin.

Self-Removing Covering

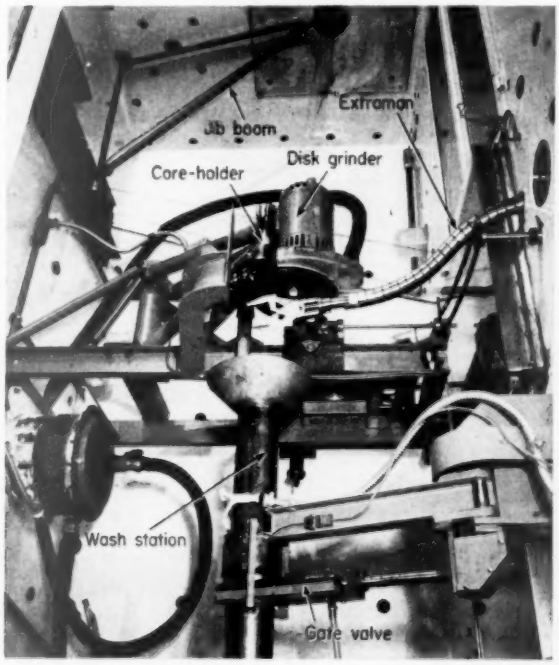
The core-holder region is covered with graphite secured by silk cord during construction of the loop. During irradiation the cord disintegrates, leaving the graphite loose around the holder. As the loop is pulled from the container, the graphite falls off.

"Extraman" Manipulator

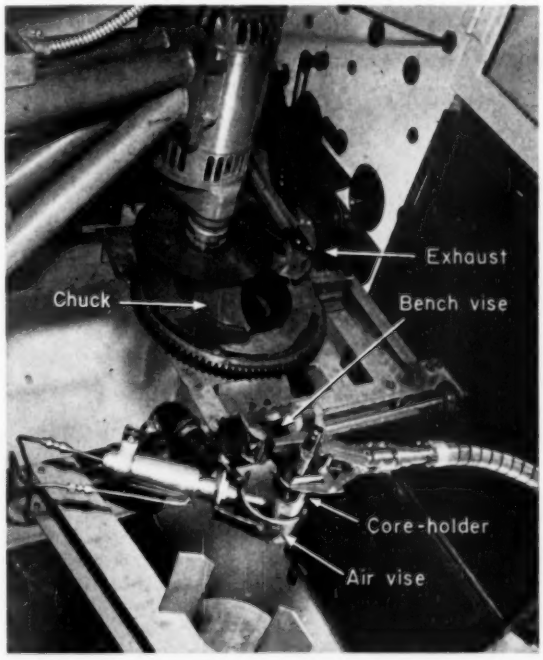
Considerable interest has been shown in the "Extraman," an extra low-cost emergency tool. It is composed of two series of ball-and-socket joints, forming segmented sections, separated by a straight rigid length. The segments are held together by 12 $\frac{3}{32}$-in. stainless-steel wires, threaded through radial holes in the ball-and-socket segments. Bending of the operating segment causes a reversed action at the slave end. In this model (Fig. 5) the slave section bends 180 deg for 90 deg of the master.

Various jaws can be attached. The 2-in. Extraman has parallel jaws with 4.5-in. maximum opening. A hydraulic cylinder closes them with a gripping force of over 50 lb; they are spring opened. The $1\frac{1}{2}$-in. Extraman has jaws operated by a hand hydraulic pump. The 1-in. has manually operated parallel-jaw tongs. (Size of Extraman is diameter of hole needed.)

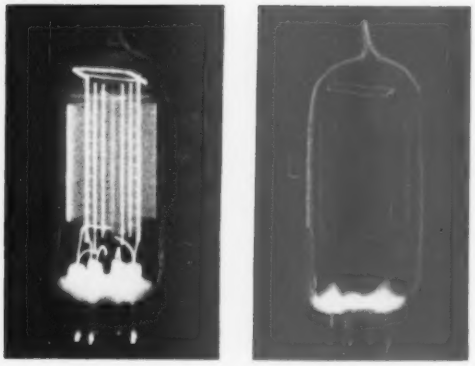
Construction of the manipulator is simple. Masonite die stock is used for the joints, fabricated sheet steel for the jaws. The segments are banded with a stainless-steel sleeve.



5. ROOF-PLUG SLEEVE through which loop container is lowered, then guided into chuck directly beneath. Normally, first hot-cell operation is container removal. However, the loop would be drained first, in case plugged lines or emergency conditions prevented draining and flushing at the reactor. To drain the loop, it is clamped with the bottom end about 3 ft from the floor of the hot cell. Electrode of modified commercial metal disintegrator (not shown) is swung under loop container. Current and coolant are turned on and the electrode raised slowly, until container and core-holder are pierced with a $\frac{1}{4}$-in. diameter hole. Circulating solution and several washes are draining into metal-recovery drain. Loop then is lowered to about $\frac{1}{2}$-in. from floor and reclamped in . . .

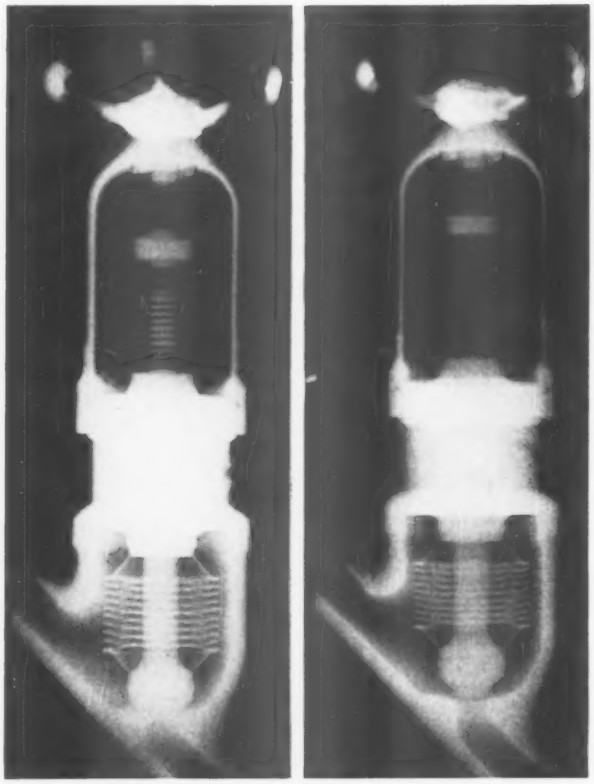


6. SPECIAL CHUCK that rotates work. Container removal: disk cuts as container is rotated; upper container section is removed through roof; hook of jib boom is engaged in bail; boom is raised; loop is drawn from container bottom that is then discarded. To remove wire-banded insulation, loop is swung against blades; with grinder's aid, bands are cut. "Extraman" tears off covering. LOOP PIPES are then clamped in bench vise, and core-holder cut off. Vise is opened; core-holder drops into wash station. Gate valve stops it; washing and drying is done, aided by Calrod heater. Station is swung over carrier, gate valve opened and holder released. To remove specimen core-holder is clamped in air vise. Disk cuts off rounded end; assembly drops out



THULIUM^{170} SOURCES emit 52- and 85-kev γ-rays with a 129-d half-life. These less energetic rays are more easily attenuated than those of Ir^{192} and more readily affect radiographic film. Thus "thin" objects like tube above show greater detail in the left radiograph, made with Th^{170}, than in the one on right, made with Ir^{192} source.

SHORT HALF-LIFE of these isotopes means that sources need to be renewed a few times a year; however, cost is still less than that of radium rental. Portable Th^{170} X-ray units have been developed at the Argonne National Laboratory, too, see NUCLEONICS 12, No. 5, 35 (1954)



SOURCE REQUIREMENTS are fixed by the nature of the object radiographed. We use three isotopes in our work: cobalt^{60}, iridium^{192}, and thulium^{170}. Co^{60} has half-life of 5.2 yr, emits γ-rays of 1.17 and 1.33 Mev, is useful in range 1–12 in. of steel. Ir^{192} ($T_{\frac{1}{2}}$ = 70 d, E_γ = 0.20–0.65 Mev) is best suited for thicknesses under 1 in. However, radiographic emulsions respond better to low-energy γ-rays, and hence we use Ir^{192} up to its practical limit, 3 in. of steel.

IRRIDIUM RADIOGRAPH (left, above) gives sharper image of the thin upper bellows than does Co^{60} radiograph on right. On the other hand, Co^{60} penetrates thickest part, defining valve spindle and seat

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Radiography as a Hot-Lab Service

GAMMA-RAY RADIOGRAPHY has been used increasingly as a form of nondestructive testing and fault-location. A 1953 survey here showed that a radiographic service would be useful. The hot laboratory operations division was the logical center for such a service because it has shielding and storage facilities, remote-handling gear for sources, monitoring facilities, and personnel experienced in handling radioactive materials. The accompanying illustrations show some of the apparatus employed and results obtained.

Operations. The fact that radiography requires longer exposures with gamma-ray sources than with X-ray machines is compensated by the fact that unattended operation is possible, and several objects can be radiographed at the same time. The source can be worked 24 hr a day; 42% of our exposures were set up at the end of the working day and the exposed films picked up the following morning for processing.

In industry, shielding is used only when the source is in transit or storage. Long handling tools and short transfer times are depended on to keep exposure at a minimum. However, in a hot lab, where personnel are exposed to radiation from other sources, even short handling times can result in cumulative overexposure. For this reason, all our sources except the very smallest are designed to be handled with no personnel exposure at all.

Interpretation of radiographs. Radiographic techniques have been amply described (*1*, *2*), but interpretation of results must depend on the experience of operating personnel. Committee E-7 of the American Society for Testing Materials plans to publish a coded

punch-card system of comparison radiographs (*3*) that will aid in interpretation and serve to standardize the literature.

We gained experience by radiographing defective samples, and then sectioning them for examination and comparison with the finished radiographs. Exposing two films simultaneously was also helpful as effects of processing errors could be eliminated.

A working knowledge of the materials and methods used in fabricating the radiographed object is valuable in interpretation. For example, a radiograph of a weld showed dark spots that could be classified as either porosity or slag inclusions. However, the weld was made by the Heli-Arc process, which cannot produce slag inclusions, and the spots could thus be identified unambiguously as porosity.

Advantages. Perhaps the greatest advantage in having a readily available radiography service is the saving in time. Parts no longer need be shipped off-site with attendant delays. A less tangible advantage is the increase in plant safety, for pressure equipment can be checked more quickly and economically.

Radiography can be used to check the specifications of manufactured equipment and to aid in laboratory experiments. For example, plugs in liquid-metal circulation systems have been located radiographically; locating the leak in a delicate thermocouple dip-tube saved rebuilding the whole unit.

We are giving some thought to γ-ray fluoroscopy (*4*), which offers advantages in speed and cost but is ten times less sensitive than radiography at present.*

* * *

This work was done under the auspices of the U. S. Atomic Energy Commission.

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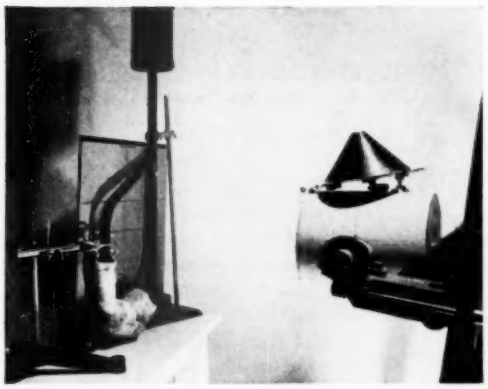
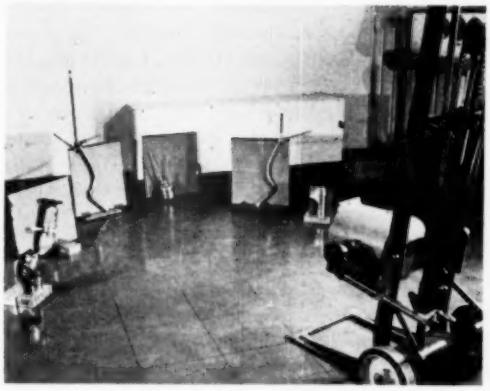
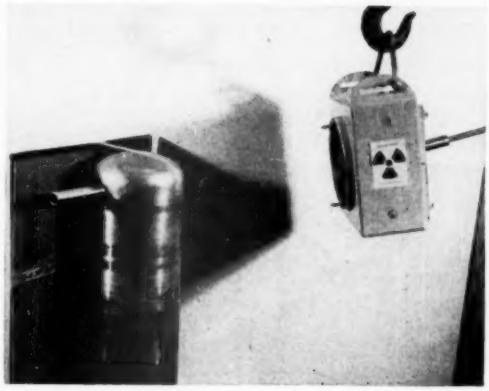
* Sensitivity is defined as the smallest percentage increase in sample thickness detectable radiographically. Gamma-ray fluoroscopy attains a sensitivity of only 10–15%, while 2% is considered routine in radiography.



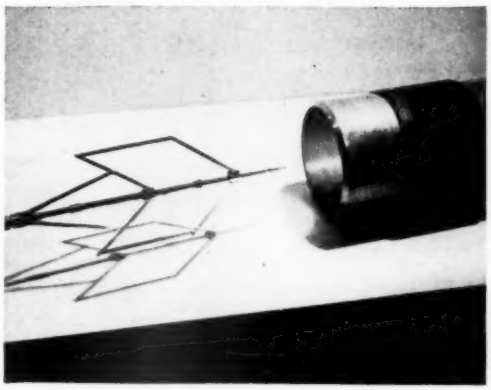
LOCATING OBSTRUCTION in loop helped liquid-metal research project. Cone-shaped cap swings on hinge to close beam-collimating aperture when source is not in use. Directional exposure insures personnel safety



SIMULTANEOUS RADIOGRAPHY of several objects saves time. Source is mounted on modified commercial hydraulic pallet-lift (Grant model 454 MF). Light-weight small-size γ-ray sources are quite portable; however a fixed installation is also available



CLOSE QUARTERS sometimes preclude the use of hand-truck source. Ir^{192} source mounted in lead-filled manipulator ball and socket can then be used. It is shown here supported by a crane hook for field inspection of a weld. Ball rotates for complete shielding of source

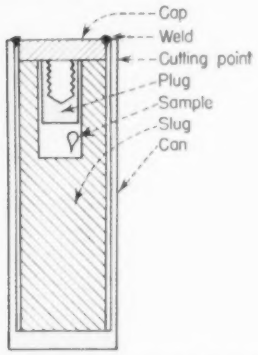


SELF-CENTERING SOURCE HOLDER is used inside pipes. Source shown, 15 mg of Ir^{192}, is smaller than usual. Small size permits clear radiographs at short source-to-film distances. Low-activity source can be bare as long handling tools are used

Can-Opening Facilities

By H. J. BELLARTS
Hanford Atomic Products Operation, General Electric Co., Richland, Washington

1. Sample can goes into . . .



SAMPLE is deposited in small hole in hollow aluminum slug, placed inside aluminum can that is welded shut. After irradiation in a Hanford reactor, slug had to be opened and sample transfered to shipping container. Operation took place with 8–10 in. lead shielding

FACILITIES CONSIDERED in this article enable two men to open a sample can in about 1¼ hours. The tiny sample of special material must be handled from behind ponderous shielding. Equipment is described for severing the cap from the sample can (Fig. 1), removing the cap to a safe place, reaching in and extracting the plug, then extracting the sample, or "papoose" as it is called, and depositing this in a shipping container.

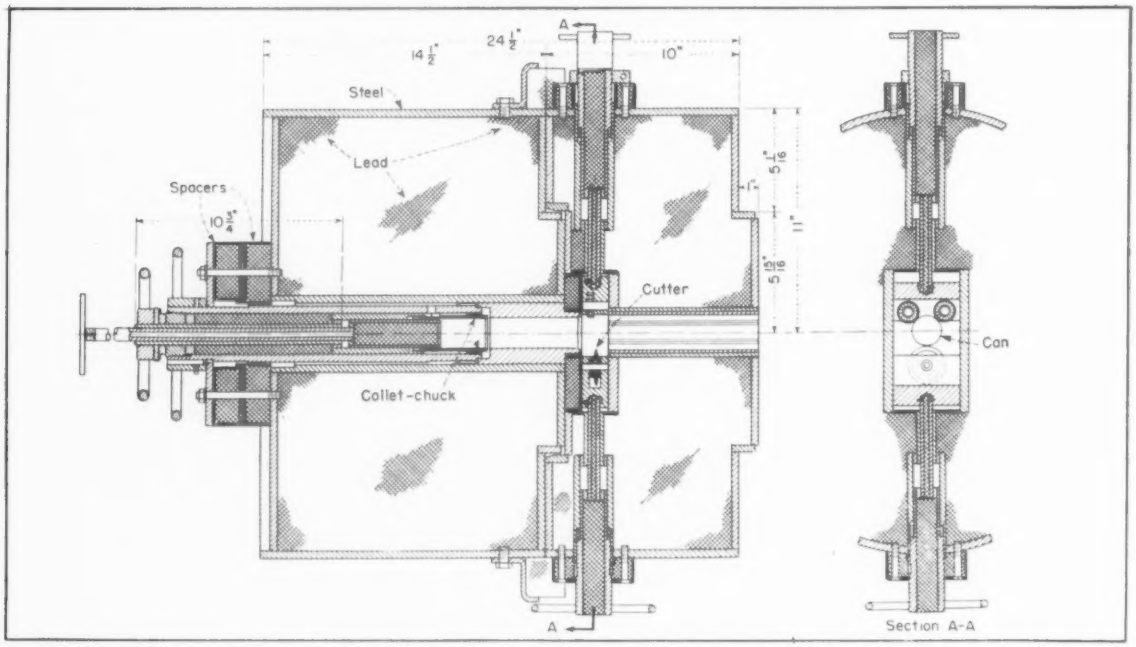
It was assumed that the equipment would have a very short useful life, and that few samples would be opened with it. Accordingly, all operations are done manually except for heavy lifting (a crane was available). This decision precluded use of elaborate and expensive power devices.

Contrasted with an underwater design, the method described here avoids the possibility of sample loss and keeps the sample dry and free from extraneous contamination.

The radioactive sample can arrives in a shipping cask on a railroad car. A crane moves the shipping cask next to an underwater transfer cask. A removable ram protrudes from an end of the transfer cask; when the cask is set on that end the ram raises the can so that it can be grasped with tongs. When the cask is raised, the ram and can recede. Three pairs of lifting lugs on the cask allow it to hang horizontally or vertically with a selected end up.

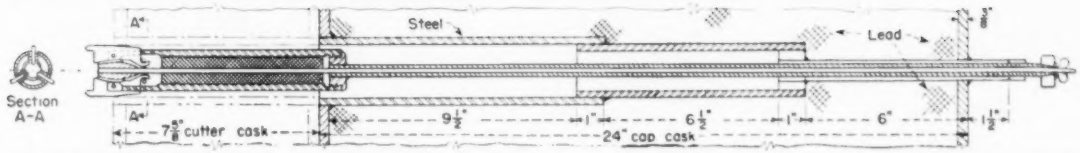
The can is removed from the shipping cask and dropped into the cylindrical axial hole in the vertically hanging transfer cask. The cask is lifted from the water, shielding plugs inserted and ram-rod extension removed. It is then placed horizontally on the cask cart or dolly. The transfer cask is then attached to the cutter cask and the sample pushed into the cutter cask with a plunger. Different plunger lengths allow handling cans of different lengths. The cutter cask is also arranged for different lengths. Opera-

2. Cutter cask where cap is severed. Cap cask joined to it admits the . . .



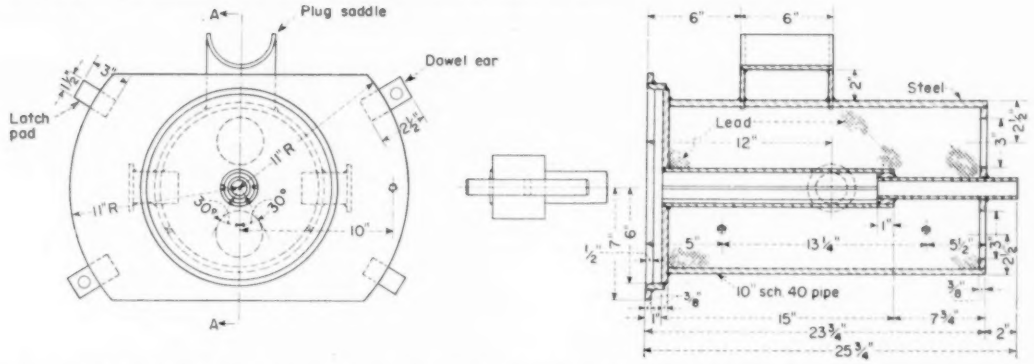
DESIGN CENTERED around cutter cask that remains stationary as other casks, on special cask dolly, are latched to it. Dolly has pointed dowels for rapid alignment. Sample arrives in shipping cask, is moved into transfer cask and wheeled to cutter cask, wherein sample can is pushed with plunger. (Cap cask is positioned after this operation.) Collet-chuck holds can and rotates it while rolling-wheel pipe cutter cuts cap off at predetermined location without damaging inner slug. Ball bearing back-up rollers are displaced, lest they close cut by pressure on small ridge formed by cutter. This pipe cutter does not form chips, so loose radioactivity is not spread

3. Cap-retriever tool to remove cap. Cap cask is then replaced by . . .



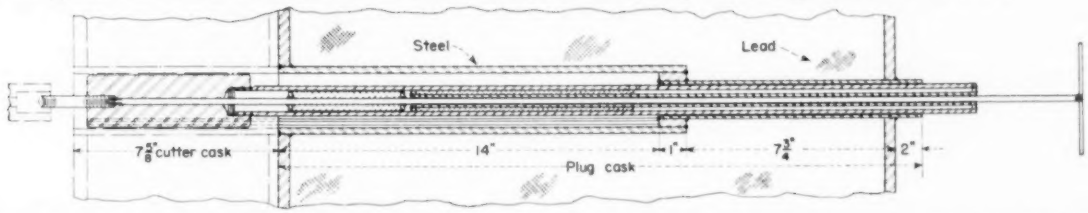
DETACHED CAP is about silver-dollar size and shape. Bi-conical wedge opens and closes grasping jaws, acts as ram in case jaw teeth stick in soft aluminum cap. Mechanism is locked by wing nut. Cap is withdrawn into cask that is then unlatched, withdrawn, its open holes plugged, and held until cap is discarded

4. Plug cask latched to cutter cask. Plug cask is entrance for the . . .



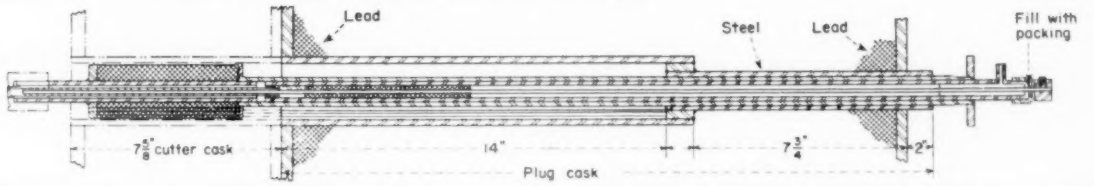
CONSTRUCTION of plug cask is typical of servicing casks. Cutter cask fits into 12-in. diameter recess, forming continuous 2-in. axial cylinder. Cask plug is placed on saddle when it is removed, keeping it handy for reinsertion when casks are separated. Plug cask is attached after cap cask is removed

5. Plug remover that unscrews and extracts sample can's plug. Through same cask . . .



DETAIL of plug-remover shows how tool is inserted through cask. Carefully dimensioned length of stud with screw driver attachment permits stud to screw into can plug without threading off carrier rod. When plug is attached, assembly is withdrawn inside cask, cask is backed away. Stud and plug are then screwed off, drop into burial container

6. Sample-retriever assembly enters and removes sample



RUBBER TIP on long probe picks up irregularly shaped sample by vacuum. Assembly is then withdrawn, funnel placed over sample and vacuum disconnected. Sample drops into shipping container. Empty container remaining in cutter cask is pushed back into transfer cask that is then removed. Disposing of empty can completes operation

tions from then on can be followed in Figs. 2–6.

Construction of the entire series of casks and tools required $1,900 for material and 2,500 man-hours of labor.

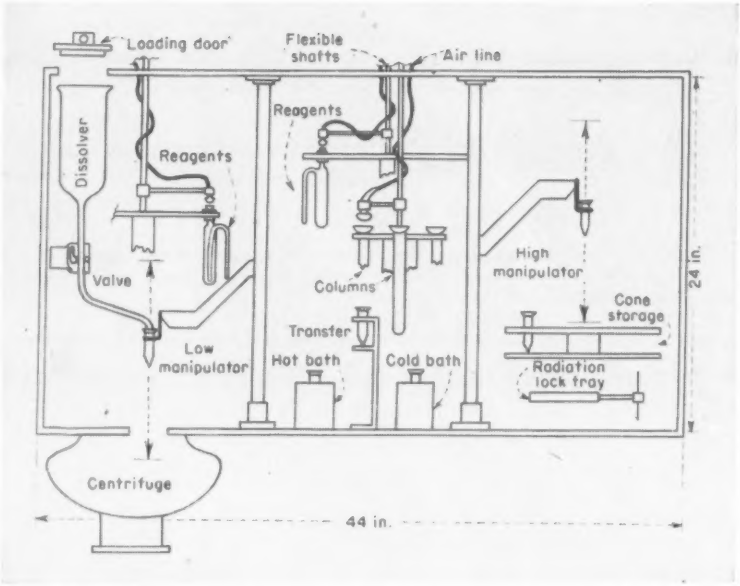
Much of the equipment was made from carbon steel and soon rusted. It has been in service about five years and is still ready for use.

Several research programs have used these facilities. The can has been cut at several different places without damaging the contents. No excessive radiation doses have been received while operating the device.

Equipment for Remote Chemical Separations*

Difficulties in successful separation of transplutonium isotopes bear lessons for all hot labs

By L. F. MILLER
and E. M. KINDERMAN
General Electric Company
Hanford Atomic Products Operation
Richland, Washington



1 PROCESSING EQUIPMENT is in box located within modified multicurie cell. Box height was chosen to permit installation of flexible shafts through existing cell ports while retaining eye-level operation. Two rotary manipulators were chosen, rather than one large one, because of improved circumference/area ratio. Dissolved products are discharged through hydraulic valve into centrifuge cones held by low manipulator that moves them on for further processing. Proper ion exchange requires 8-in.-high column, leaving just enough operating space above and below

CHEMICAL PROCESSING of two 20-gm pieces of irradiated plutonium-aluminum alloy was requested of us by Dr. S. G. Thompson of the University of California Radiation Laboratory, who evolved ways to recover residual Pu and transplutonium isotopes in a hot lab for further processing at lower activity levels. The simplest and quickest safe design was desired since the operation was one-of-a-kind and brief.

Hot-lab equipment described in the accompanying illustrations was evolved. Originally two months were allotted in which to get equipment assembled and in operation; three months were required, with considerable overtime. The cost of major components was $2,500, the complete cost: $7,500.

The job was accomplished successfully, but not without some instructive errors that are recounted here.

A minor trouble involved the steel springs that close the manipulator tongs (see Fig. 4). They functioned well, for many months and thousands of closures, until the Tygon coating was damaged when the manipulator head was used as a hammer. Then the HCl atmosphere took its toll in corrosion and the spring failed. Remote replacement was achieved, even though equipment repairs of this nature had not been anticipated.

Another difficulty arose in connection with the delivery of reagents and stirring air. Addition of reagents from special containers shown in Fig. 5 was easily controlled with the operator's hypodermic syringes. However refilling emptied containers was not simple; instead reagent was transferred through containers to the work.

Delivery lines were not trapped nor check-valved. This was definitely a mistake; on four occasions active solution was transferred outside the cell through these lines. On two of these occasions no activity escaped, but the other cases caused extreme difficulty even though a minute fraction of the activity in the cell was transferred.

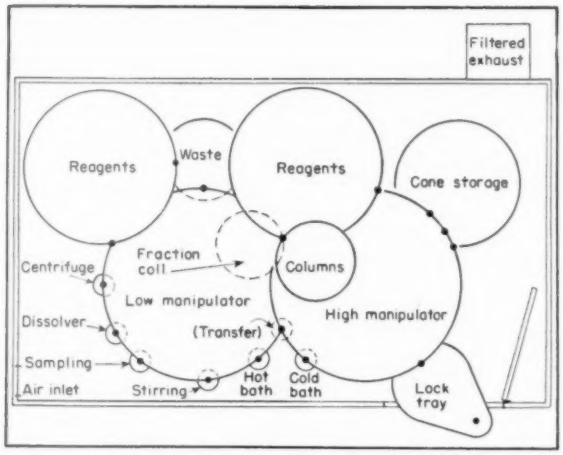
A primary error was that the dissolver outflow (see Fig. 1) was nearly horizontal for 6 in. This was not desirable but was necessitated by the arrangement of other components. A free-flowing, dilute slurry was to pass through, and no difficulty was expected. After half the material had passed, a heavy, viscous slurry plugged the horizontal portion of the line, and our troubles began. During the six weeks before the plug was relieved solution volumes doubled, difficultly soluble silicates and aluminates formed, the equipment was exposed to a corrosive atmosphere, and NH_4Cl coated the mirrors (some visibility was restored by remote swabbing).

An attempt was made immediately after the plug formed to insert a wire into the tube through the loading door atop the inner box using a master-slave manipulator in the cell wall. Wire size and manipulator unwieldiness prevented success.

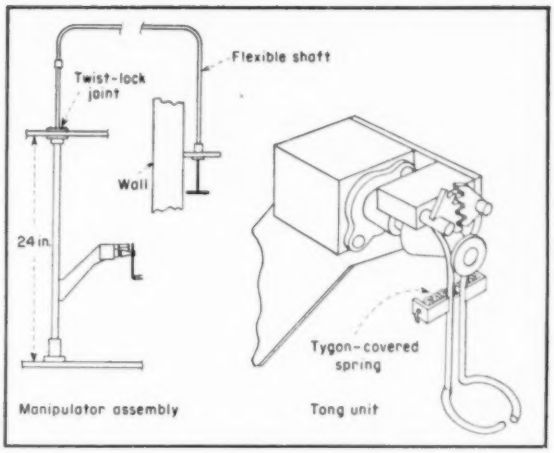
In a more direct second attempt, a light port was removed from the cell top and a flexible shaft supported by a concentric 8-ft tube used to probe and drill the compacted slurry. Light pressure with this "plumber's helper" was not effective, but we were reluctant to use force on Tygon tubing.

Without adequate trial of this method, or sufficient time for reflection, we tried a third scheme. A small-diameter Saran tube that replaced the flexible shaft was forced into the slurry and acid added. Some reaction occurred, and an emergency developed: the person manipulating the tubing

* This article is based on a paper presented before the Northwest regional meeting of the American Chemical Society, Richland, Washington, June 11-12, 1954.

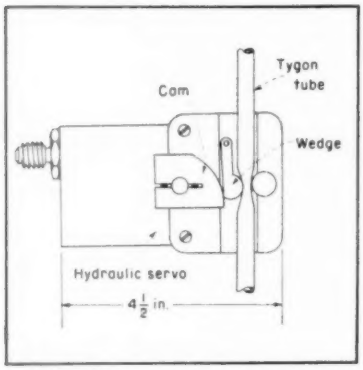


2 PRINCIPAL COMPONENTS ARE ARRANGED on circles, with transfer at points of intersection. Scheme works well, however clutter makes free manipulator rotation impossible at any level. Thus most horizontal transfers require multiple vertical motions as well to clear obstructions, lengthening manipulation time and increasing errors. Flexible shafting is used to rotate racks containing centrifuge cones, disposal containers, reagents, and ion-exchange columns. For last two, vertical shaft motion connects ball joint of desired vessel to air line that controls liquid transfer remotely



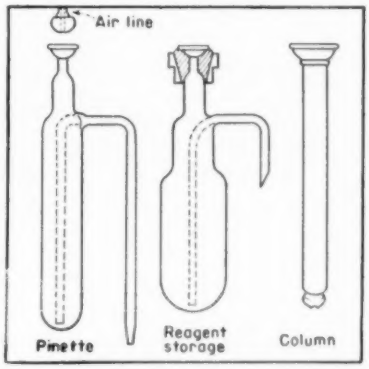
3 ROTARY MANIPULATORS are connected from top of inner box to outside by flexible shafting. Motions are reversed, up for down, and clockwise for counterclockwise, permitting twist-lock connection for ready disassembly on completion of the project. Complete reversal of motion does not confuse the operator and is not a source of difficulty

AIR-OPERATED MANIPULATOR HEAD holds loads over 1 lb easily given a shoulder against which jaws can bear. Unit opens to either of two widths selected by operator. Closure is effected by Tygon-coated springs for "fail-safe" operation



4 DISSOLVER VALVE (left) has no moving parts exposed to solution, offered large flow capacity. It consists of a length of radiation-and-chemical-resistant Tygon tubing pinched by cam operated by "fail-safe" Sperry hydraulic actuator. Tubing tends to "set" after being closed for a long time, but not enough to affect flow seriously

5 SPECIAL GLASSWARE (right) was equipped with ball joints for ready connection to lines used to transfer solution



found his hands covered with droplets of active solution from between the two tubes. The outer tube had dropped, closing off a small section of Tygon tubing in which a vigorous reaction was occurring. The only outlet was the annulus between the tubes.

No personnel contamination occurred, but one month was required to clean the room.

Following this, the solution and slurry remaining in the dissolver were transferred to temporary storage vessels atop the inner box. A plumber's helper with screw-point cutter was used to bore through the compacted slurry. This time the outer tube was perforated as a precaution against pressure build-up. The plugged line was relieved without incident.

Repairs were an anticipated necessity; access was through a 6-in.-diameter cell port and corresponding inner-box hole. Adequate airflow, covering each item with plastic spray as it was being removed from the contaminated area, and careful technique insured no contamination of personnel or room.

Lessons Learned

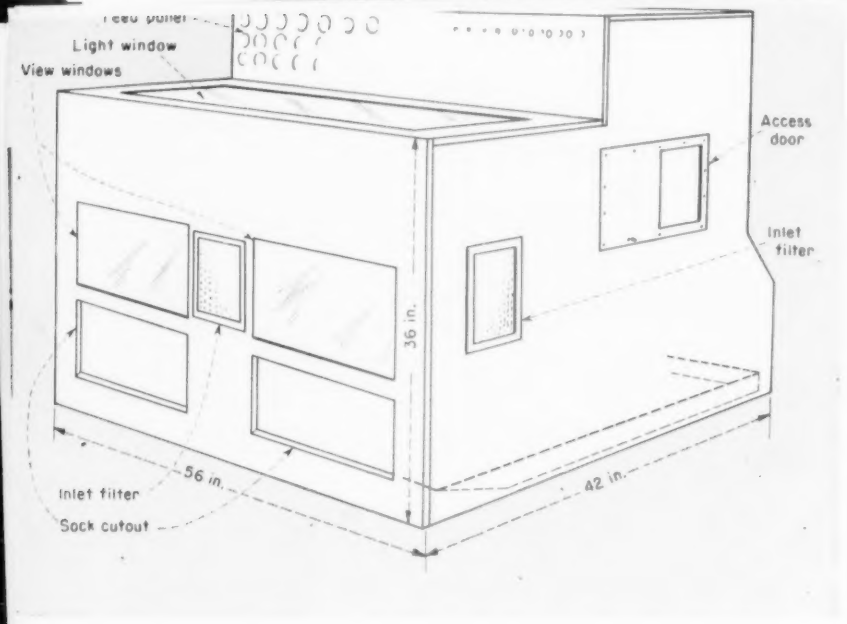
Urgency, whatever the cause, should not be allowed to confuse hot-lab operations. Adequate time must be available for discussion and reflection before any new or unusual steps are taken; it is difficult to correct errors once operation has begun.

Design of remote operations must allow for manipulative error for remoteness impairs the senses.

Assuming that our experience can be successfully applied, we propose a modified hot-cell technique. Cell access and viewing would be provided from all sides and the top. Simple, readily exchangeable, one-function manipulators would serve as short extensions of the hands. Work would be done through the top in over-the-wall fashion. A sectioned top closure would permit minimum open space with maximum velocity of inward-flowing air. High-capacity filtered air exhaust would be necessary. Applications of this idea are underway here at Hanford.

* *

We wish to acknowledge the contributions of E. K. Hulet, R. M. Carr, and W. G. Ruehle of the Radiation Laboratory, University of California. It is also a pleasure to acknowledge the considerable efforts of our co-workers, L. E. Kattner and H. H. Van Tuyl.



1 BOX SHELL consists of ¾-in. plywood painted with white Amercoat 33. Odd-shaped back fits cave wall for maximum floor space. Sock cutouts are covered by Vinylite and Tygon tong socks. Door on right is only access during run. Ball-and-socket tongs pass material through door into quart ice cream cartons held in stand tilting them at 45 deg to box. Cartons are removed by loop tong over front wall.

FRONT VIEWING WINDOWS are washed by squirt tubes fed from outside cave, wiped by motor-driven windshield wiper. Incoming air sweeps across window faces and through box to general box exhaust high in left rear corner at a 15-ft³/min rate. Exhausted air is sucked through filters and discharged through cave exhaust manifold and stack. Survey of environs showed no detectable contamination. Snug-fitting sheet-metal tray that fills entire box floor is sloped in front to bring dropped objects within tong range

Separating Transplutonium Isotopes from Irradiated Plutonium

By WILLIAM RUEHLE, Jr.
University of California Radiation Laboratory
Berkeley, California

SEEKING TRANSPLUTONIUM isotopes, nuclear chemists asked us to remove fission-product contamination from a plutonium-aluminum alloy sample from the Materials Testing Reactor. After irradiation for more than a year in the highest neutron flux, the sample measured about 2,500 r/hr at its surface and contained at least 100 curies of fission products along with 1 curie of curium. Hot-lab techniques were required to the point where further separations could be carried out by nuclear chemists using dry boxes.

We had just five weeks to design, build and test equipment and to work out flowsheet details. Some transplutonium isotopes of great interest had half-lives under 24 hr; speed in delivery and processing was important.

Shielding Equipment

In the light of our previous experience we decided to use a closed box within our 6-in.-lead cave. The box, shown in Fig. 1, was the largest that could be inserted into the cave.

We used ball and socket tongs to operate in the box, as shown in Fig. 3.

Leakage radiation was avoided by suspending 1-in.-thick lead bricks over the top of the box, piling 4-in. lead bricks close to either side of the box, and extending the cave wall up to the top shielding. This was feasible since we used tong manipulation only. Feed lines were passed over the permanent wall through small openings in the temporary additional front shielding, out of the line of direct radiation.

Chemical Processing

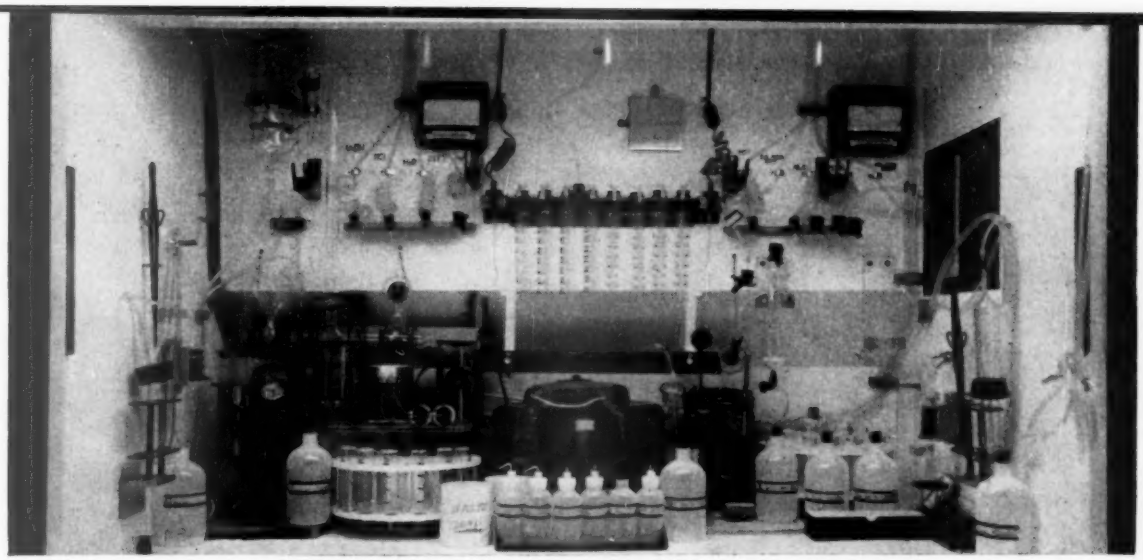
The necessary chemical equipment was assembled as shown in Fig. 2. We spent 5 days carefully checking each step of the flowsheet. In some cases tracer quantities of activity were used to check a procedure.

The irradiated sample arrived about 23 hr after removal from MTR and was immediately transferred to the aluminum dissolver. Monitor readings at the cave wall were about 15 mr/hr, and there was no reflected radiation in the cave room. The slug dissolved in 18 min; after settling, centrifuging and washing, the residue fit in 2 centrifuge cones. This residue did not seem to dissolve in concentrated HCl; it remained just as black. However, careful examination with a spotlight showed a solution, and not a slurry.

Purification of the material, by precipitation and resin-column processes, was carried out without equipment trouble or mishap. After working 20 hr, far less time than we had ever spent on similar processes, the heavy-element fractions were sufficiently free of beta-gamma activity to permit their transfer directly to gloved boxes. The chemists worked about 40 hr to complete the purification and separation of the transplutonium isotopes present.

Results

The many counting plates made from process solutions indicated less than 10% loss of alpha activity, the beta-gamma contamination was reduced over ten thousandfold.



2 BOX INTERIOR is crowded but efficiently arranged, providing space for reagents, hot plates, centrifuge, resin columns, and other processing equipment. Large bath at left holds 1-l dissolver. All baths operate at controlled temperature, adjustable with tongs. Reaction fumes are drawn through hood and condenser to external scrubber and filter at 7-ft^3/min rate. A 1,200° C furnace and platinum crucible are included to dissolve residues if acid fails. Hot bath just right of centrifuge holds 150-ml vessels and, aided by hot-air jet, evaporates 5 cm^3/min without boiling solutions. Hot baths near furnace and cold bath are UCRL standard, hold 40-ml cones. Gassing hood is used with cold bath to saturate solutions with HCl.

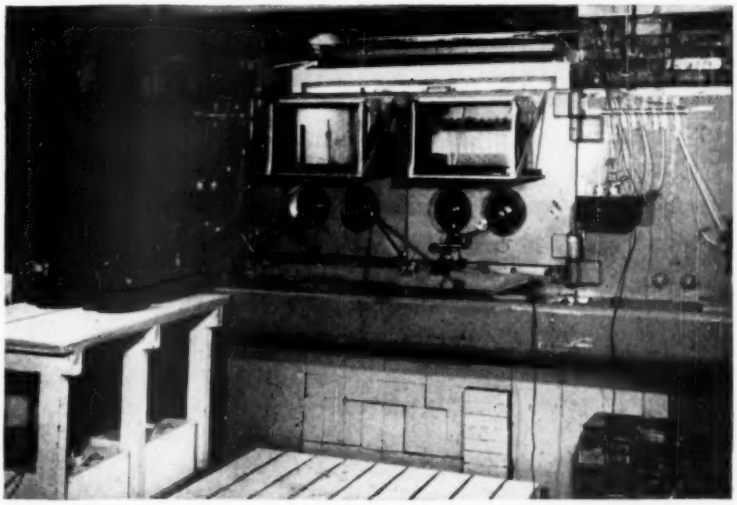
CENTRIFUGE COVER GUARD IS CUT OUT and fitted with Lucite lid to permit tong-loading of cones from turntable storage rack. Centrifuge speed is Variac-controlled; magnetic braking stops motor from full speed in about 5 sec without jarring. Centrifuge head is of special design to carry long-stem 40-ml centrifuge cones. Balance is provided to balance pairs of cones. Stirrers are Pt wires attached to shaft of 6-v d-c motors in Bakelite cases. Small ice-cream cartons are used for solid wastes, 16-oz polyethylene bottles for liquid. Spotlight, long forceps, mirror, thermometer, stopcock grease, oil can, wipes and razor blades are incidentals always included in this remote-control box; they have often proved to be very useful

The research results were extremely gratifying: elements 99 and 100 were found in more abundance than expected, although only in terms of atoms, not curies. Considerable quantities of Am, Cm, Bk, and Cf were isolated; much useful information was obtained. This process, using MTR-irradiated source material, has been of such value that more runs are planned for the future.

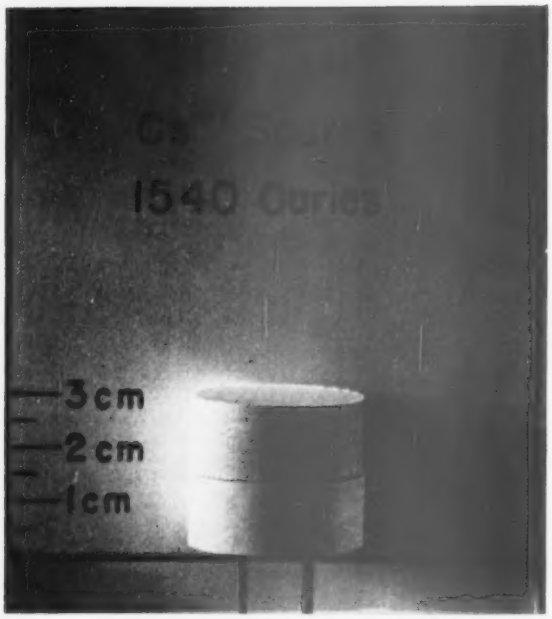
From performance data on the equipment used, we have evolved plans for a standard system to be used in research problems involving multicurie combinations of alpha, beta, and gamma radiation. The system includes fixed lead caves with 2-9-in. walls to be used with a single type of mobile cave box. Equipment for ventilation, waste disposal, manipulation, and processing is being adapted for use with this box.

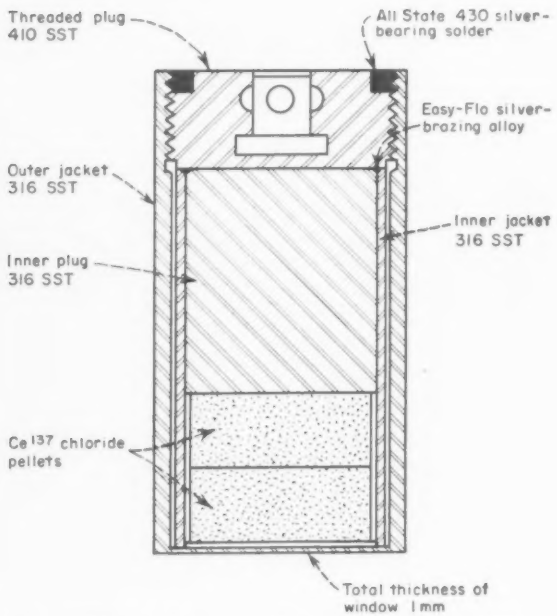
* * *

I wish to acknowledge the outstanding work of Thomas Parsons and Robert Silva in planning the operation, and thank Francis McCarthy for development of special apparatus, and Robert Silva and John Anderson for assembly, testing and operation of the equipment. Without the efforts of these men and the entire equipment development group, as well as the complete cooperation of the chemists, this process could not have been handled with such success.



3 BOX IN MODIFIED CAVE is illuminated by fluorescent fixture on light window. Front-wall shielding was completed before actual run. Four tongs operate via uranium ball-and-socket joints to gain universal access within. Heavily used reagents are fed from squeeze bottles outside through Tygon lines into box; little-used reagents are dispensed inside box from 4-oz polyethylene wash bottles adapted for tong use. Process-solution aliquots for counting plates are reproducibly withdrawn, 8 lambdas per turn, with a Hamilton screw syringe for accurate samples even where vision is poor. Using 30-ml glass syringes (not shown) fitted to a check-valve system, the operator can continuously pump or develop suction in each of three lines, depending upon syringe orientation. Syringe is covered with a plastic bag to prevent leakage of box air near operator. Two Tygon tubes run from syringe to box, one for control, one merely for return. Control line terminates in No. 2 one-hole rubber stopper fitted with No. 12 ball clamp for simple, nonsticking, air-tight connection to female 12/5 ball joint atop transfer bottle or pipet. Gooseneck transfer bottles that can be seen through the window are in bracket and can be changed during run





CESIUM-137 PELLETS were formed in manipulator-cell hydraulic press under 29,000 lb/in²; the two pellets were 760 curies, 33.07 gm, 10.739 cm³ and 780 curies, 27.86 gm, 10.182 cm³. In assembling source, pellets were stacked in stainless-steel cylinder, plug inserted, and closure made with brazing alloy; unit was placed in second cylinder with magnetic threaded plug and thread sealed with solder. Window of completed source is 1-mm stainless steel having gamma attenuation of 6%; at 3 meters, intensity through window was 50 r/hr

Operating a Manipulator Cell

Radioactive sources are prepared in this manipulator cell; auxiliary cubicles are provided for chemical processing and source calibration

SPECIALIZED TOOLS handled by manipulators and source containers assembled in manipulator cell. Tools are suitably modified to be grasped by manipulator

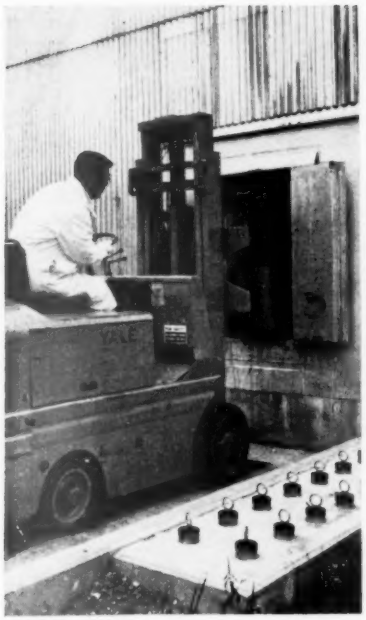
By E. E. PIERCE
Oak Ridge National Laboratory
Oak Ridge, Tennessee

A HOT-CHEMISTRY CELL utilizing two model 4 master-slave manipulators is used for preparing radioactive sources at the ORNL radioisotope development department. The cell was completed in 1952 at a cost of $29,502.

Inside cell dimensions are 60 in. wide and 43 in. deep; the work surface is 42 in. above the floor. Lead-brick shielding inside the cell reduces scatter through manipulator openings; shielding on top is provided by 2-in.-thick lead bricks and concrete blocks on a ½-in.-thick steel plate. The barytes-concrete cell walls are 24 in. thick on the front and sides and 12 in. thick in back.

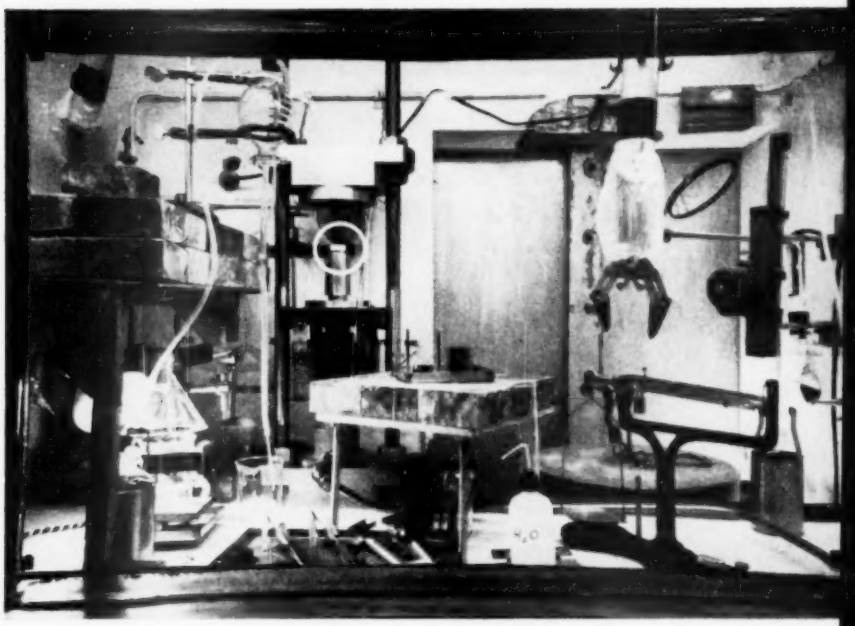
Services, e.g., gas, air, water, vacuum, and hot off-gas, are located inside

From storage . . .



SHIELDED CARRIER transferred Cs^{137} solution to be purified from underground storage garden to hot cell. Solution was stored in 500-ml bottle in stainless-steel container with lifting tabs on top. Tee-shaped device in top of carrier, with extension handle, engaged container tabs and raised it into carrier. Carrier was placed in recess of hot cell; carrier top was removed by $\frac{1}{12}$-hp Bodine reversible motor geared to 45 rpm; container was lifted out and placed on working surface

To manipulator cell



MANIPULATOR-CELL window consists of two $\frac{1}{2}$-in.-thick glass plates on outside and two $\frac{1}{2}$-in.-thick nonbrowning plates on inside, separated by six 4-in.-thick cerium-glass plates with 3.27-gm/cm^3 density and $\frac{1}{8}$-in. spacers; mineral oil fills space between plates. Shielding is equivalent to barytes-concrete cell walls. Pneumatic saw, for opening aluminum cans containing radioactive compounds, utilizes 20,000-rpm pneumatic rotary grinder with 2-in.-diameter slitting blade mounted on cross feed from 4-in. lathe; vertical travel is operated by manipulators and horizontal by extension handle. At cell rear, next to carrier access door, portion of working surface is recessed to 21-in. depth. Here, carrier top is positioned at working-surface level. Type 347 16-gage stainless-steel working surface extends to form 4-in. flashing along walls; floor spray aids decontamination. Rack above working surface holds manipulator tools

the cell in triplicate. These services can be controlled by valves or extension handles on the front of the cell. In addition, 110- and 220-volt a-c receptacles are inside the cell, with control switches outside.

Various sized bottles are easily handled in the cell. Metal capsules or cans containing radioactive compounds may be opened and the compound placed in solution.

A shielded cubicle to the right of the cell is used for processing solutions. Radioactive solution is transferred from the cell to the cubicle through a 1-in.-diameter tube shielded by 2-in. lead. After purification, the solution is returned to the cell for sampling, monitoring, and source assembly.

Cobalt-60 source pieces are calibrated in a cubicle to the left of the cell. Cobalt pieces are transferred from an underground storage garden to the cell in a bottom-discharge shielded carrier. With an electromagnet held by a manipulator, the cobalt is placed in a stainless-steel cup on a chain conveyer; the conveyer moves into the cubicle where an ion-chamber reading is recorded. The pieces are returned to the cell and placed in the source.

Cs-Source Preparation

A cesium-137 chloride teletherapy source, for use in an Oak Ridge Institute of Nuclear Studies machine, was completed this year using the hot-chemistry cell.

After the cesium chloride was transferred to the hot cell in the shielded carrier, the cap was removed from the bottle with the manipulators and the solution transferred to the purification cubicle by vacuum lift. The purified solution was returned to the cell by gravity to be sampled; 520 ml of CsCl solution (773 curies) was transferred by vacuum lift to a head vessel and dropped by gravity to an evaporator (400-ml Vycor beaker, flat resistance-wire furnace element, and heat lamp). The hot off-gas vacuum was connected to a Pyrex funnel inverted over the beaker. The dried salt was transferred to a tool-steel die and pressed into a pellet containing 760 curies. The process was repeated for a second 760-curie pellet.

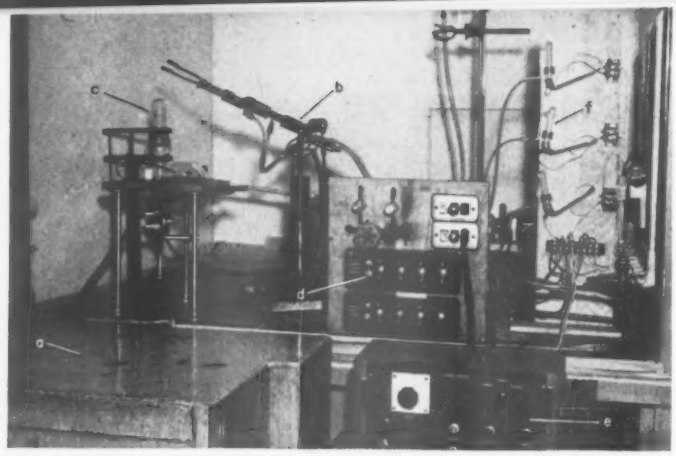
A high-level manipulator cell, utilizing two model 8 master-slave manipulators (Central Research Laboratories, Red Wing, Minn.), is scheduled to be completed this year. It will be located in the radioisotope area; up to 10,000 curies of Co^{60} will be handled safely.

* * *

The hot-chemistry manipulator cell was designed by J. R. Farmakes and E. E. Beauchamp, under the direction of A. F. Rupp.

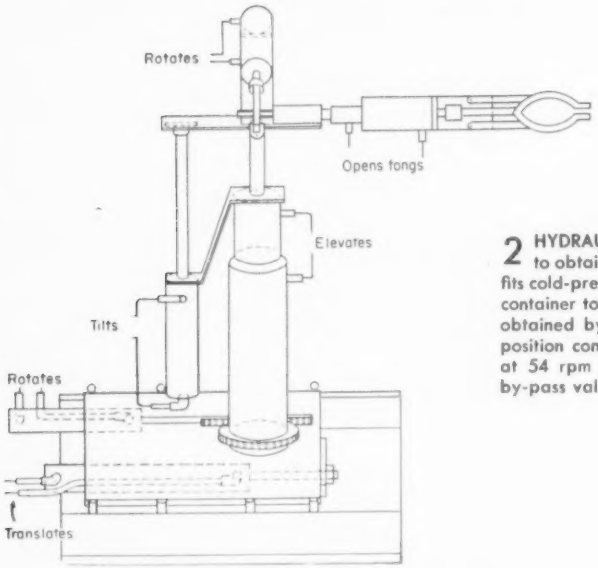
Preparing Neutron Sources

By JOHN L. RICHMOND*
Mound Laboratory
Monsanto Chemical Company
Miamisburg, Ohio

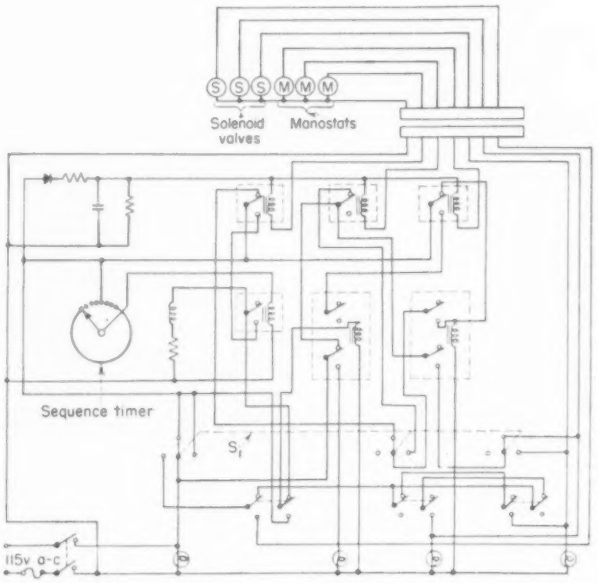


1 POLONIUM-BERYLLIUM NEUTRON SOURCES are processed remotely by this apparatus. Because equivalent neutron intensity in r/hr is 700 times that of the 0.8-Mev Po γ-ray the shield is hydrogenous, a 2-ft water-filled barrier (a). Manipulator (b) and vacuum-system cover (c) are controlled hydraulically via valves (d). Automatic-process-control circuit (e) operates on signal from manostats (f) to control processing-gas flow with solenoid valves. Entire assembly costs $4,000

This apparatus remotely assembles, seals, and processes Po-Be neutron sources using hydraulic manipulator and relay-controlled processing



2 HYDRAULIC MANIPULATOR uses six double-acting hydraulic cylinders to obtain motions like those of fingers, wrist, arm and body. Manipulator fits cold-pressed Be powder cylinder 0.49 in. in diameter and 0.50 in. long into container to which it has also transferred Po. Rotations through 180 deg are obtained by racks and pinions. Flexible polyethylene tubing connects 3-position control valves to cylinders. Vickers model 2NP-3001 pump driven at 54 rpm supplies 175-lb in.^{2} system pressure, maintained constant by by-pass valves



3 SEALING PROCESS IS CONTROLLED by relay circuit (right). Manostats measure system pressure; solenoid valves control flow of process gases. System is evacuated to 2 mm; inert gas is added until pressure is 20 mm; this flush is repeated 3–5 times. Then $Ni(CO)_4$ is added to a pressure of 10 mm and decomposed by induction heat, coating and sealing source. Usually 5–10 cycles of nickel carbonyl addition and evacuation are made before changing holding hook's position and repeating process. Switch, S_1, selects manual operation, automatic flush cycle, or automatic coating cycle.

AFTER SEALING source and determining Po content calorimetrically, source is heated to 600° C to distribute Po throughout Be. Source strength is then determined by neutron counting. During calorimetry and counting source is approached for comparatively short periods, making 18-in. tongs safe for handling

* The services of M. R. Hertz and J. H. Birden in assembling this apparatus are gratefully acknowledged.

HOT LABS

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Operating Busy Hot Cells

Design and operating problems of a hot-cell facility are explained. Managerial control is by assigning cell keys to group scheduled. Each group has own operators

By S. DISMUKE
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Oak Ridge, Tennessee

THIS ARTICLE OUTLINES the Solid State Division's hot cell management. The facility's construction and operational administration are the topics covered.

Cell Criteria

Basic requirements that have lead to our cell philosophy are:

1. Make maximum use of limited floor area. This is imposed to a large extent by financial consideration.

2. Provide for frequent changes of cell apparatus, as this is inherent in the type of work to be done.

3. Separate the operating area from the cell loading, sample, and equipment storage areas.

4. Provide direct view into cells. Mirrors were unsatisfactory; small zinc-bromide windows had been used successfully at the time the facility was planned.

An in-line cell arrangement (Fig. 1) was developed to accomplish the objectives. It has these advantages:

1. Removable inter-cell barriers allow various equipment arrangements.

2. Manipulators can be moved from cell to cell. This is useful in case of manipulator breakdown or in some types of two-handed manipulator operations.

3. Reduction of sample handling. The use of casks to transport samples from one cell to another is eliminated.

Cell Construction, Operation

An area for five cells was provided in the building, but only three were constructed. Before the rest of the cells were built, a re-evaluation of cell design was made. It was decided that the then recently developed Argonne model 4 master-slave manipulators could be used for a large amount of light sample handling and equipment operation. The new manipulator would complement the much heavier but less dexterous handling capacity of the manipulators that had been developed for the original cells.

Accordingly, three master-slave cells were built next to the three cells already constructed. Figures 2 and 3 show the facility. Some of the general operating practices are given next.

A hot-cell operating group as such is nonexistent. The cell manager has over-all responsibility for assigning and scheduling cell space for various proj-

* ORNL is operated for the Atomic Energy Commission by Carbide and Carbon Chemicals Co.

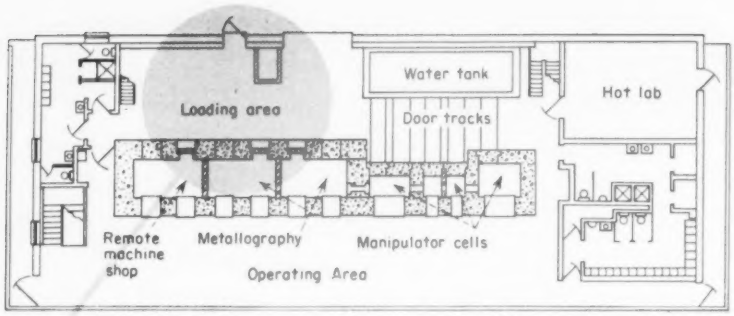

FIG. 1. Floor plan shows layout of hot-cell building. Cells are built of concrete block, lime-sand mortar. Balconies (above hot lab and in opposite corner) and part of change rooms are used for contaminated equipment repair and storage

Crowding here calls for extra care in preventing and controlling spread of contamination

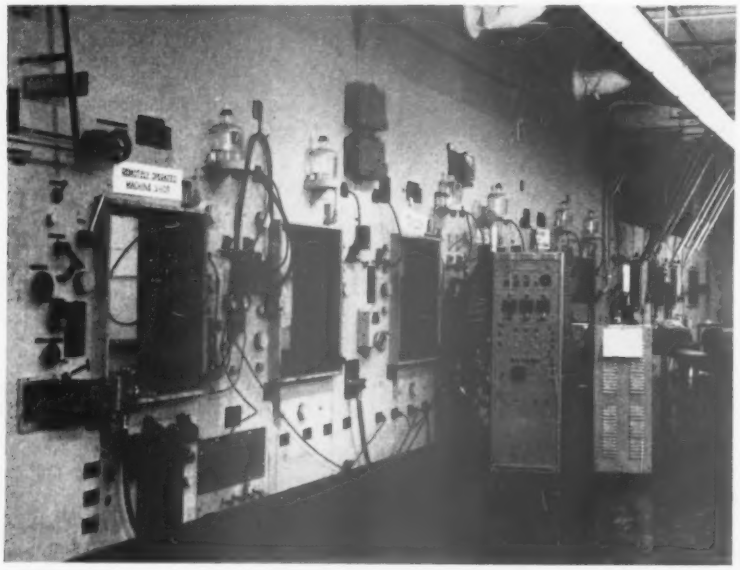

FIG. 2. Cell operating area shows controls for each cell and the master-slave manipulators. Machine-shop equipment is in first cell, second contains metallographic equipment, others are for short-term experiments. Cells are loaded from rear

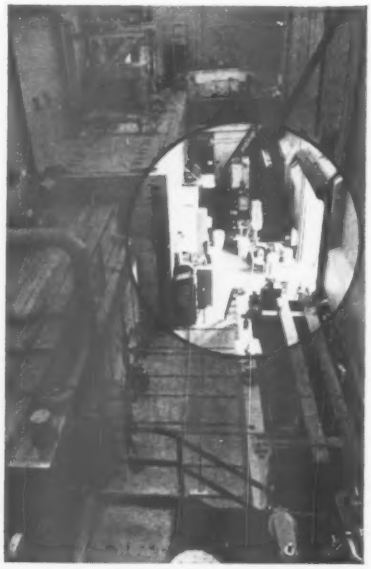

FIG. 3. Loading area shows doors for loading cells. Doors for smaller cells run on tracks, larger ones are hinged. Walls between large cells can be raised by winches

ects. The cells are assigned by turning the key over to whomever needs it. Groups using hot-cell facilities furnish their own personnel to do the work.

This arrangement is successful because groups doing a large amount of hot-cell work have people who become thoroughly familiar with all hot-cell techniques and regulations. Besides conducting their own experiments and decontaminating cell and equipment, they are expected to help with the more general aspects of keeping the cell running and helping less experienced people.

Operation of this facility is far from ideal. Shortly after the building was completed, a great many more people than had been planned for had to be housed in it. As a result, there is a heavy traffic of people in the cell loading area who have nothing to do with cell operation.

Overcrowding has resulted in frequent spread of contamination. This is kept in check by frequently mopping the floor.

Liquid waste is carried away by hot drains within each cell. Solid waste is collected in a dumpster outside the building, if its activity is less than 7.5 mr/hr. Higher-activity waste is put in a lead carrier and taken to a burial ground to be emptied.

Health-physics personnel make regular floor smears, hand-and-foot counter checks and air-monitor checks. They are called whenever highly active samples are handled outside the cells or personnel enter the cells. They check all equipment leaving the hot area.

Special lab coats and shoe covers are worn in the cell loading area; these are removed when leaving. When working inside a cell, special coveralls, shoes, socks, shoe covers, gloves, hats and sometimes masks are worn. On leaving the cell proper, shoe covers and gloves are removed. The remainder of the contaminated clothing is removed later.

Blotter paper is used extensively, as walkways over contaminated areas, to set contaminated equipment on, and as temporary floor pads.

Two machinists, a millwright and an electrician help wherever needed.

When new apparatus is built, the engineering and mechanical division furnish engineering and drafting help. Frequently it is necessary to design and test several prototypes before a final design is made.

Operating the

Hanford Radiometallurgy Laboratory

Experience since July, 1953, has shown that this $1.6-million facility has . . .

By L. D. TURNER
*Hanford Atomic Products Operation**
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THE DESIGN of the radiometallurgy laboratory at the Hanford Atomic Products Operation (*1*, *2*) has been demonstrated to be a useful one. Its advantageous features and its limitations are considered here.

1. Many good features . . .

The operating cells permit an 8-hr day for repeated examination of samples with radiation levels to 1,000 r/hr at 3 ft. They have been similarly effective for examining two extensive production tests to determine the properties of uranium irradiated to various exposures.

The lead-glass viewing plugs allow photographs of irradiated materials. The glass recovers from radiation-damage fast and well enough that there is no need for thermal annealing.

Both dry- and wet-storage units have operated very satisfactorily. Thirty fuel elements are being kept in the wet storage basin. Another 300 samples, representing radioactive uranium, aluminum, stainless steel, and zirconium are in dry storage. These samples and fuel elements have been handled easily many times between the storage unit and one of the examination cells.

The decontamination unit has been used for its intended purpose only in a limited fashion, but this use has shown that the unit will function satisfactorily. Primary use to date has been for conducting examinations of low-radiation-level samples of defective structural components from the pile and separation facilities.

The filtering system has proven itself in that there is no intolerable contamination in the stack gas, even with 150-r/hr contamination in the cell.

A negative pressure of 2 in. (water) has been observed inside the cells when all the removable plugs were inserted. Proper placement of the air-flow plugs lessens spread of contamination within the cell. The air exhaust system also has permitted the door to be opened over halfway without unduly contaminating the air outside the cells.

The 140 removable 7¼-in.-diameter plugs in each cell have only 50% utilization at the present time. More will be used when additional equipment is installed in the cells. A few holes have had to be drilled into the cell base to connect with the building waste system for the disposal of filtered low-radiation-level liquid waste into the laboratory-area crib system.

2. Some limitations, and . . .

Although the building generally is satisfactory for performing its design function, certain deficiencies have shown up during operation. For instance, the canyon width should have been a few feet wider to permit readier access to the cells with the manually-controlled fork-lift truck. Careful operating techniques can prevent scraping the wall, but such caution is not always used. The lunchroom designed for 20 has some difficulty in seating this number at one time. The public address system, which worked fine during acceptance testing, is difficult to use with the air-conditioning system on. Several other nuisance-value deficiencies prevented a total effort for several months.

Contamination within the high-level cell usually is removed only with difficulty.

The lead-glass viewing plugs in the cells are not large enough to permit more than one person to observe operations within the cell at one time. Future cells will have larger viewing ports to accommodate viewing by more personnel than just the experimenter.

It has been necessary to modify the Hanford slave manipulators (*3*) by improving the hydraulic system and the gripping handle. Operator technique is slightly more demanding of the operating personnel than it is with the Argonne master-slave manipulator, but there have been no damaging incidents.

Tests will be completed faster after all the standard physical- and mechanical-property-testing equipment are available and after a few modifications are made to: isolate the low-radiation level experiments, improve communications, improve access to the basement, improve shielding at the tensile and double-crystal X-ray testing equipment.

3. Efficient scheduling

Acting as a service organization, and composed of two metallurgical engineers, four mechanical engineers, two chemists, six engineering assistants, and one clerk, the laboratory staff usually tries to make about a 50% split between obtaining metallurgical information and solving operational problems (such as accountability, guide service, maintenance, design and installation of test equipment).

Work requests are reviewed monthly so that manpower and equipment needs can be evaluated. Work is scheduled according to a priority established as the request forms are received. Costs are made on the basis of the type of manpower employed with the engineers expense at about $7 per man-hour and the engineering assistants at about $4 per man-hour. The equipment is usually not charged to the customer unless it is so highly specialized that it obviously will be used only once or twice.

The laboratory staff operates all equipment and conducts all hot investigations with the interested technical people as on-lookers. Our service reports are considered primary data. The requestor usually makes a final report covering the complete experiment and irradiation conditions.

The laboratory safety practices have been issued as a standard-practice manual (*4*). It is reviewed routinely. In addition, one radiation monitoring surveyor always is available to assist in radiation control.

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* Operated for the U. S. Atomic Energy Commission by the General Electric Co.

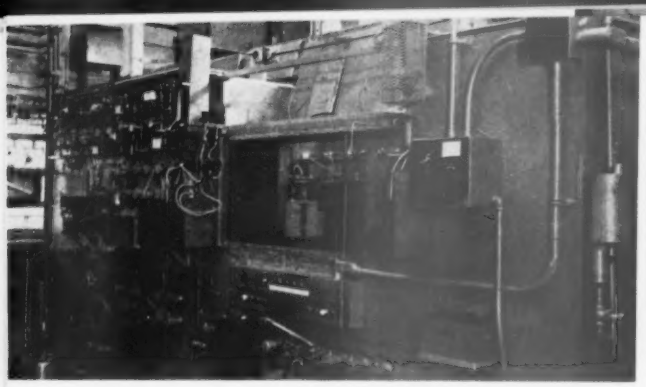

FIG. 1. Operating face of the original cell

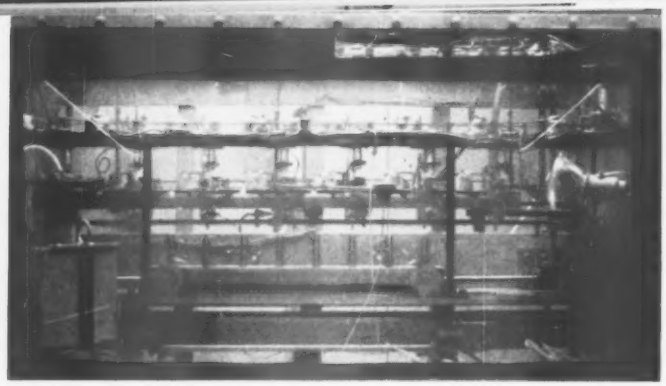

FIG. 2. Liquid-liquid extraction system in the cell

Remodeling a High-Level Chemistry Cell

By B. V. COPLAN
and D. J. SMITH
*Knolls Atomic Power Laboratory**
Schenectady, New York

A CHEMICAL-SEPARATIONS pilot plant in a hot cell at the Knolls Atomic Power Laboratory was remodeled after operating 3 years. Decontamination and reconstruction techniques, timing, and costs are considered here. Design revisions made to reduce future maintenance also are described.

Known as the Engineering High-Level Laboratory (EHLL), the pilot unit is a small-scale facility for feed preparation and liquid-liquid extraction of high-level radioactive solutions. The system provides a flexible, compact, and easily operated unit at a low initial investment. Figure 1 shows the original cell's operating face. The liquid-liquid extraction system, as seen through the cell's observation window, is shown in Fig. 2. Cell construction and operation have been described previously.†

Reconstruction of the EHLL was prompted by a need to relieve three limitations: 1, the system for the preparation of feed materal did not have sufficient capacity to supply the extraction system; 2, the unit lacked adequate facilities for carrying out new program ideas; 3, valve failures during operation were limiting the pilot plant's usefulness. The stainless-steel valves failed in two ways: 1, the valve-stem drive thread froze to the valve body; 2, radiation destroyed the valve-stem's Teflon packing.

Cost, Manpower, Schedule

For purposes of cost analysis, manpower requirements, and scheduling, the project was divided into three phases: 1, decontamination of the cell to permit installation of new equipment; 2, prefabrication of all new equipment; and 3, installation of the prefabricated assembly in the cell. The project took 14 weeks to complete and cost $30,418. Table 1 shows manpower, costs, and over-all time for each phase. The direct labor charge includes that of all crafts and shops plus the direct labor charge for the one chemical engineer and three laboratory assistants who planned and supervised the operation. The overhead charge averages about 155% for all types of direct labor involved. It includes such items as administration, plant services, purchasing, and security.

Decontamination

The duration of each decontamination operation and the radiation reduction at five stages during the procedure are reported in Table 2.

Internal flushing of the tanks, lines, and valves was accomplished by adding the following acid solutions to the system and allowing 8-hour contact

* Operated for the U. S. Atomic Energy Commission by the General Electric Co.
† J. R. Gould, KAPL-812 (1952).

TABLE 1—Expenditures for Remodeling Cell‡

Expenditure	*Steps*		
	Decontamination	*Prefabrication*	*Installation*
Elapsed time, weeks	9	9	5
Man-hours, total	995	2,014	2,047
Engineer	180	180	200
Lab assistants	620	460	600
Health physicist	175	0	0
Shops	0	130	104
Crafts	20	1,244	1,143
Costs, dollars, total	5,744	12,396	12,278
Direct labor	2,250	4,209	4,294
Overhead	3,414	6,580	6,690
Material	80	1,607	1,294

‡ Additional 70 man-hr were used, but did not fit into these categories. Volunteers worked for short periods decontaminating high-radiation zones; their time was not charged.

TABLE 2—Radiation Levels After Stages in Decontamination Process

Stage, duration	*Radiation level*§	
	(mr/hr)	*(mrep/hr)*
Initial	3,000	100,000
Internal flush (2 weeks)	1,500	100,000
External rinse (2 weeks)	1,500	11,000
Equipment removal (3 weeks)	500	500
Cell cleanup (2 weeks)	100	0

§ Readings taken 2 ft above floor at cell's center.

in each case: 1, 10% nitric; 2, 10% citric; 3, 10% oxalic; 4, 3% hydrofluoric-20% nitric. It was not possible to determine the extent of decontamination for each reagent; but a decrease of 50% in the over-all gamma level was observed in the cell interior at the end of the procedure.

Persistent high beta-radiation readings after the internal flush indicated that active solution had spilled on the outsides of tanks and lines from leaky valves and fittings. An exterior rinse of the tanks, valves, lines, and framework was made by spraying them alternately with 5% nitric acid and water until no significant activity was detected in the rinse solution. The cell interior's beta-radiation level was reduced by a factor of ten.

An electric arc cut the cell's contaminated equipment into approximately 1-ft lengths; the sections were then transferred to 55-gal stainless-steel drums for disposal. The maximum contact radiation reading at the surface of the drums as prepared for storage was 3,000 mr/hr. This decreased to 1,000 mr/hr after 3 months.

Finally, the strip coat was removed from the cell walls and decontamination of a stainless-steel catch tray covering the bottom of the cell was completed. The tray was decontaminated by placing a solution of 0.04*M* $KMnO_4$ and 5*M* HNO_3 in the tray for a period of 16 hr. This solution was then drained out, and a solution of 1*M* $NaNO_2$ and 1*M* HNO_3 was added. By repeating this operation twice, the tray's radiation level was reduced to background.

To secure a reasonable working-time limit in the cell interior, it was necessary to provide additional shielding over small areas of the wall and floor at points where contamination had penetrated the strip coat and soaked into the concrete.

Prefabrication

Concurrent with decontamination of the old equipment, new equipment was being fabricated. As shown in Fig. 3, the tanks, valves and lines were assembled on a stainless-steel framework that could be moved into the cell without disassembly. To ease operation, provide maximum equipment life, and reduce direct maintenance, provision was made for remote replacement of valves, direct observation of liquid levels, and remote sampling.

Remote replacement of valves. Twenty-eight valves are located in the cell area. Each of these can be replaced remotely by working it through a 1½-in. stainless-steel pipe section that extends through the cell wall to the cell's face at a point level with each set of two valves. The valve mounting consists of two stainless-steel blocks fastened together with a large bolt. Tubing that extends through holes in the blocks is sealed into a valve on either side of the bolt by standard stainless-steel ferrule fittings. The blocks act in place of the standard compression nut of the fitting to seal the ferrule to the tubing. The bolt is loosened remotely to release the valves for replacement.

Direct observation of liquid levels. Liquid levels in six tanks in the cell can be observed directly. They vary in capacity from 500 ml to 5,000 ml. Each tank is constructed from a flanged section of double-tough Pyrex-glass pipe with a rounded glass bottom. A stainless-steel plate is gasketed to the glass pipe's flange by a Teflon gasket. All entry lines to the tank are stainless steel and pass through the tank's top plate through standard stainless-steel fittings.

Remote sampling. Samples can be taken from four tanks in the unit. The sampling system consists of a length of stainless-steel tubing that originates at a dip line in the tank and passes through a plug valve to a glass surge pot. By using a syringe to place vacuum on the surge pot, the sample is sucked through the valve into the surge pot where the presence of the sample can be observed. The plug valve then is remotely rotated 90 deg; the solution held in the plug is discharged through a line in the valve's side into a traveling-cart sample container, which brings it outside the cell.

Installation

The prefabricated framework was moved into the cell during the tenth week. The valves were lined up with the cell wall's valve-stem holes; then ears were welded from the cell framework to the prefabricated assembly to lock the new system in place. Figure 4 shows the operating face of the completed cell.

The entire system was leaktested before operations began. The initial pressure check used 25-psi water. When all leakage under these conditions had been corrected, the pressure was increased to 85 psi. Again all leaks were corrected. The system was drained and each section of the system was evacuated to 26 in. of Hg. Adjustments were made until the section would hold this vacuum for at least 1 hr. Finally, the entire system was leaktested with 25-psi Freon.

* * *

Thanks are expressed to D. Auth, J. R. Gould, G. E. McKenna, and F. P. Rudek for their contribution in the remodeling of the unit.

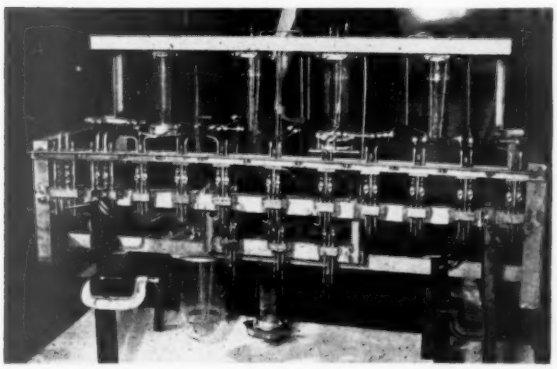

FIG. 3. Prefabricated feed preparation unit

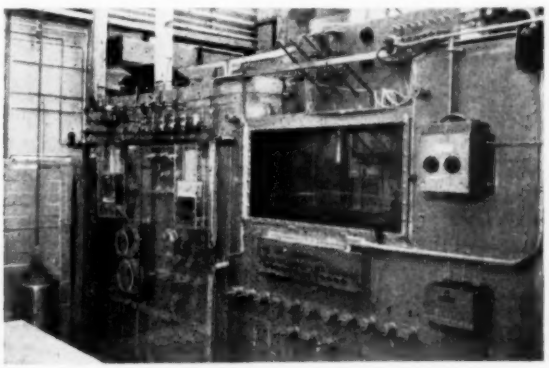

FIG. 4. Operating face of the remodeled cell

Keeping Costs Down in an Analytical Hot Lab

Strict budgeting of research and development projects make minimum costs for analytical chemistry services imperative. Economical procedures for organization, sampling, analysis, and safety are described here

By E. W. CHRISTOPHERSON
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OF ALL REQUESTS submitted to the analytical laboratory the most basic question is, "How economical an operation does the laboratory provide?" Research and development projects assign a certain portion of their budgets to analytical support. If subsequent analytical costs are excessive, research studies naturally must carry reduced analytical support. Thus, the laboratory is responsible for supplying required service at reasonable cost. As a result, cost is the final yardstick in laboratory programming.

The operation of the laboratory will be considered to fall into three phases: 1, customer sampling problems; 2, organization and assignment of responsibility within the laboratory; and 3, types of radiation hazards encountered and protective measures employed.

Organization

The laboratory has found that best operation is achieved with a staff consisting of two laboratory assistants for every chemist.

After rather extensive training in nonradioactive analytical laboratories has been supplemented by additional training on radioactivity hazards and acceptable protective measures, assistants are expected to perform any written analytical procedure.

Because of the necessary flexibility and thorough training required, the laboratory's nontechnical personnel are of high caliber. Besides the customary laboratory requirements, they are responsible for working safely, for ascertaining radiation exposure, and for recognizing unsafe exposure and contamination conditions.

Among laboratory assistants the development of overspecialization is avoided by assignment on rotational basis to all types of procedures. This enables the laboratory to meet with ease the problems of transfers, terminations, absences, and vacations.

Technical personnel adapt new analytical ideas to the needs of the laboratory, undertake short-term development projects, meet unusual analytical commitments, and contribute somewhat toward training new nontechnical personnel.

Sampling Problems

Although the customer furnishes and uses his own sampling equipment, the laboratory plays a significant part by recommending action to meet certain minimum standard operating procedures. Sampling problems are often difficult but usually discussion with the customer results in the adoption of satisfactory sampling methods. The laboratory requires that sample containers have less than 100-mrad/hr exposure at the surface. Quantity of sample and kind of container can usually be combined to meet that requirement.

The laboratory requires that no smearable contamination be present on the primary sample container. Special consideration is necessary for securing samples from a glove-box operation to meet that condition. A contamination-free sample container usually can be obtained by carefully placing the unstoppered sample container with sample into a slightly larger screw-cap container in the contamination-free air-lock. The larger container can then be stoppered to give a primary sample container suitable for handling in laboratory hoods.

Analytical Methods

With regard to analytical methods, the laboratory considers several factors to be important. First of all, methods are sought that require only standard, available equipment. Even though the work volume is large, we avoid using specialty items and designing any but the very simplest new equipment. Because the work volume expected for any particular method is small and unpredictable, design costs almost always are prohibitive. Instead, proposed analytical methods are adapted to make use of simple, low-cost, and, wherever possible, disposable items of equipment. Thus equipment inventories and costs due to handling and decontamination of equipment are kept at a minimum.

Any analytical method is expected to make contamination control as easy as possible. Gravimetric methods, furnace operations, and excessive handling are avoided. In fact, the simple operations of boiling and pouring are considered undesirable. The usual accuracy and precision requirements must be met. Frequently, another consideration is involved. Since the laboratory follows research and development work, the current analytical problems are many times the future problems of Hanford control laboratories, as new ideas become incorporated into the manufacturing operation. Where such appears likely, the laboratory is anxious to introduce and gain experience with methods that will stand the strain of shift work

* Operated for the U. S. Atomic Energy Commission by the General Electric Co.

and the more rapid personnel turnover found in control laboratories. By trying to anticipate such needs the laboratory is frequently able to make valuable recommendations to control laboratories.

When methods find sufficient application, they are included in a manual prepared for use within the immediate organization. The pattern used is similar to one described recently.* Each working page is divided into three vertical columns. The first one is reserved for normal stepwise directions concerning the analytical procedure. The middle column contains corresponding key points and the third column, safety precautions. Numerous comments pertaining to radiation hazards are included. Operators are reminded of the need for surveying and for following standard operating procedures. Of course many other kinds of precautions are included. The pages then are placed back to back in numerous chart holders to give a mobile, durable set of procedures. The bound manual is also available at some central point within the laboratory.

Protective Measures

The laboratory gives much consideration to radiation hazards and protective measures. Because of their different characteristics, one usually thinks of alpha hazards apart from beta-gamma hazards. Alpha problems will be considered first.

Alpha hazards. As a general rule the laboratory feels that absolute control is preferred wherever feasible. Absolute control is considered to exist when all equipment can be handled directly without personal contamination. Thus glove boxes are a last resort. However, sometimes they are quite necessary.

One can further divide alpha hazards into those associated with alpha-active liquids and those associated with alpha-active solids. It is usually possible to achieve absolute control when handling liquids. Milligram amounts of plutonium can be handled on such a basis. Radioplutonium assay of liquid samples using both low- and high-geometry counters is a good example. Frequent surveying is essential; but operators become skilled in keeping activity from straying and little clean-up time is required. One must always consider a certain minimum number of items regulated. Examples are the inside of waste bottles, slurp lines, and the sample ends of pipets.

Even if the material to be counted is in a solid form, no special hazard need exist. Regardless of the composition of the original liquid sample, an accurate separation method usually can be found that will permit safe mounting and drying of the plutonium to be assayed.

The importance of proper technique, the presence of suitable working conditions, and the application of customary good housekeeping and standard safety practices cannot be overemphasized in achieving absolute contamination control.

The laboratory finds dry chemistry combined with alpha activity usually means a glove-box operation. Examples are the dissolution of a solid sample for alpha radioassay and the performance of many chemical determinations that start with solid samples. Operations that work well in gloved boxes are: weighing, calcining, heating (electrical and gas), agitating, and titrating. For the latter, the Emil Griener-type buret, requiring limited maintenance, is preferable. As a rule, maintenance of glove-box equipment is accomplished with difficulty and at excessive cost.

Equipment sought is that which is compact, tested, and standard, and which requires practically no maintenance. Special items of equipment are avoided if possible because their reduced flexibility means large storage costs and high inventories. An example of a standard item that seems to require excessive maintenance is the common glass stopcock when used for alkaline solutions and in conjunction with a small orifice such as is found in a buret. All kinds of stopcock grease apparently form small particles that sooner or later plug the orifice. In a glove box, dislodging is difficult. As an alternative, an entrance tube can be placed in the glove box wall. On the inside a cheap, disposable buret tip can be attached with Tygon tubing and the buret with its stopcock attached on the outside. Standard base can be used and the stopcock maintained outside the box.

Beta and gamma hazards. Beta and gamma activities require somewhat different treatment. Due to the low activity levels required for accurate detection, radioassay readily lends itself to absolute control.

Chemical determinations and the preparation of dilutions for radioassay of fission products are entirely different. Here beta and gamma radiation is a primary problem. But complex, unique equipment is avoided here also. The flexibility of brick piles makes them much preferred to a fabricated cave. Other protection, like shielded forceps, finds application; but distance and minimum handling are most useful in keeping exposure at a permissible level.

A considerable amount of exposure problems can be solved by careful choice of analytical methods. For example, one soon finds for uranium assay that classical methods involving reduction to U(IV) require excessive handling and large volumes. X-ray absorption, while simple and accurate, requires excessive uranium. Further scrutiny reveals that chromous-sulfate titration of hexavalent uranium is as accurate as the first method—and it is much easier to control from a radiation standpoint because of the minimum sample volume and handling required.

Decontamination. Studies of economics indicate that decontamination, although quite straightforward as performed centrally at Hanford, is not always practical. The amount of time required for pickup, conducting surveys, and delivery makes it more economical to discard low-cost items like bottles and small Pyrex items after one use. Calibrated glassware and some other small items such as shell-glass centrifuge tubes and crucibles are more economically decontaminated.

What This Lab Does

Analytical chemistry performed at Hanford involves research, control, and service functions. How the service aspect operates is described here. By continuously careful consideration to cost factors involved in administration, sampling, analysis, protection, and decontamination, maximum benefit can be derived from each research-and-development dollar.

* H. H. Bliss, *Chem. Eng. News* **31**, No. 10, 991 (1953).

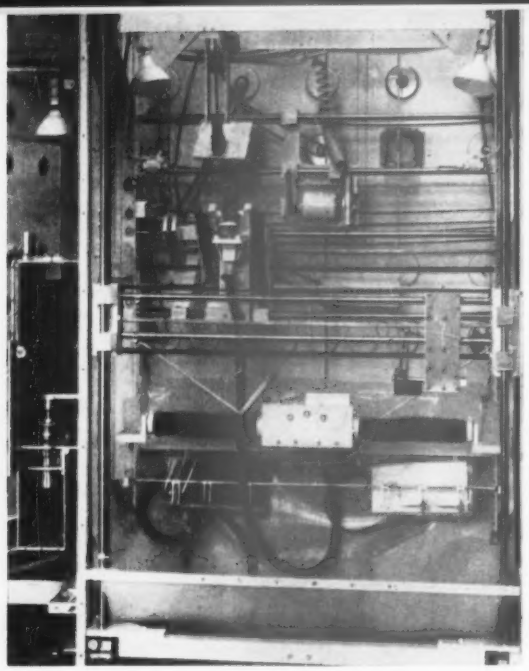

FIG. 1. When isolation box containing apparatus for sectioning irradiated fissionable material became severely contaminated, and several unsuccessful decontamination attempts were made, box was put in storage. Thus, a new handling method had to be developed

Unitized Handling of Irradiated Fuels

By L. O. SULLIVAN
*Knolls Atomic Power Laboratory**
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EXPERIENCE over a three-and-a-half-year period has caused techniques described here to be evolved for the efficient handling of irradiated fissionable materials.

The original techniques, involving isolation boxes (Fig. 1) with filtered exhaust and integral manipulator, were not satisfactory. One such box was contaminated as shown in Table 1. Experience with isolation boxes shows that they effectively control spread of contamination, but they have a high initial cost, poor manipulation, sample entry problems, and limited access for decontamination. A box system with large front doors for easy access was tried, but contamination was spread on the floor of the cell when samples were carried in and out of the box.

Because decontamination procedures frequently were delaying important experimental results, a new method had to be devised for implementing the "contain and confine" philosophy in these remote operations. Examples of the new unitized equipment are shown in Figs. 2–5. Value of this equipment was demonstrated when a slug disassembly table became grossly contaminated (as shown in Table 2) with powder of irradiated fissionable material. Each unit was decontaminated remotely and removed in plastic bags. But the cell became contaminated (as shown in Table 3) when the table cloth was rolled up. An average of two people spent seven days cleaning the disassembly apparatus and five more days cleaning the cell. Without the flexible system, the cell would have been shut down two months.

Another example of the value of unitized equipment occurred when a complex sampling mechanism failed during a hot operation. Master-slaves were used to decontaminate the mechanism from dose rates of about 10 r/hr and 50 rep/hr at 6 in. When the quick-release clamps were removed, the unit was carried from the cell by a General Mills manipulator. The hot sample was not removed from the cell. In two days, the mechanism was repaired and back in operation. With isolation boxes, a similar incident would delay operations 2½ to 3 weeks.

Thus, flexible equipment, versatile manipulation, and adequate control of contamination can increase productivity per unit volume of cell space.

* Operated for the U. S. Atomic Energy Commission by the General Electric Co.

TABLE 1—Dose from Isolation Box

Location	Dose rate (mr/hr)	Dose rate (mrep/hr)	Distance (in.)
Isolation box, right side	5,000	11,000	12
Isolation box, general	1,500	3,000	36
Exhaust filter	25,000	>100,000	6
Exhaust hose	10,000	15,000	12
Waste drum of decontam. filters	15,000	20,000	12
		75,000*	
Box in storage cell 1 yr later	250	500	3

* Open drum.

TABLE 2—Dose Rate from Slug Disassembly Table*

Location	Dose rate (mr/hr)	Dose rate (mrep/hr)	Distance (in.)
Table top	100,000†	—	6
Tubing cutter	50,000†	—	6
Rotating chuck	1,000	20,000	24
Puncture mechanism	25	3,000	24
Manipulator boots	100	17,000	3
Vise clamp	120	17,000	24
Table cloth	20,000†	—	6
Exhaust filter	40,000†	—	3

* After preliminary decontamination.
† As measured by survey instrument.

TABLE 3—Dose Rate from Cell*

Location	Dose rate (mr/hr)	Dose rate (mrep/hr)	Distance (in.)
Cell floor near table	—	20,000	12
Cell floor under table	—	50,000	12
Canopy over table	200	10,000	6
Manipulator rail	—	15,000	3
Corner of cell	—	3,000	6
Miscellaneous horizontal surfaces	—	50	3

* After removal of slug disassembly table.

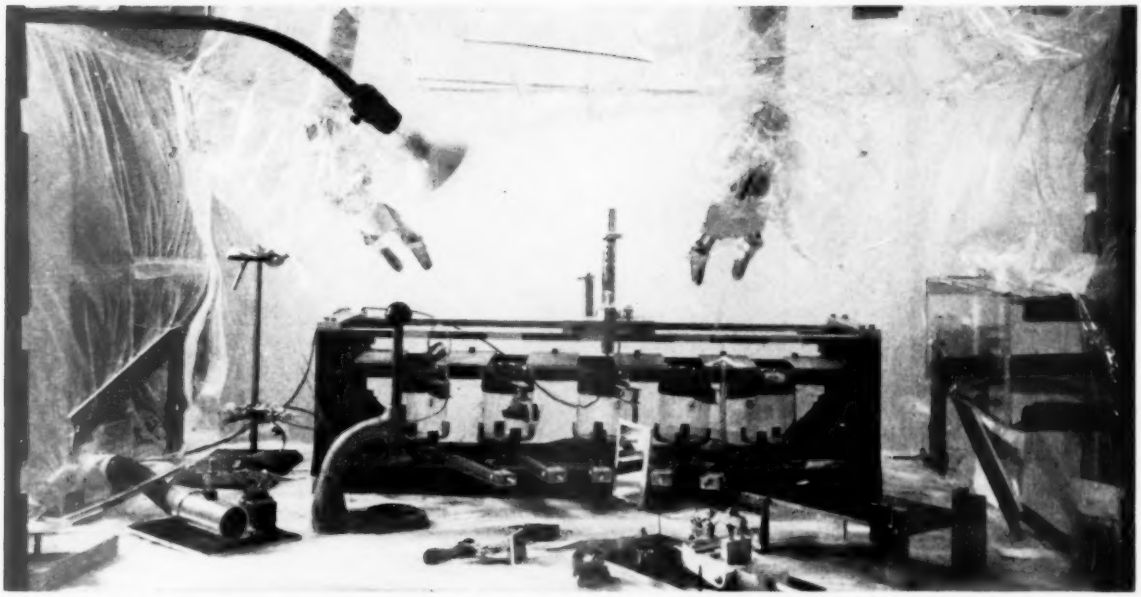

FIG. 2. In new technique, working area of table top has plastic-film walls and a canopy. Table is serviced by master-slaves, and a filtered exhaust is provided for the working area. Electropolishing equipment is shown here

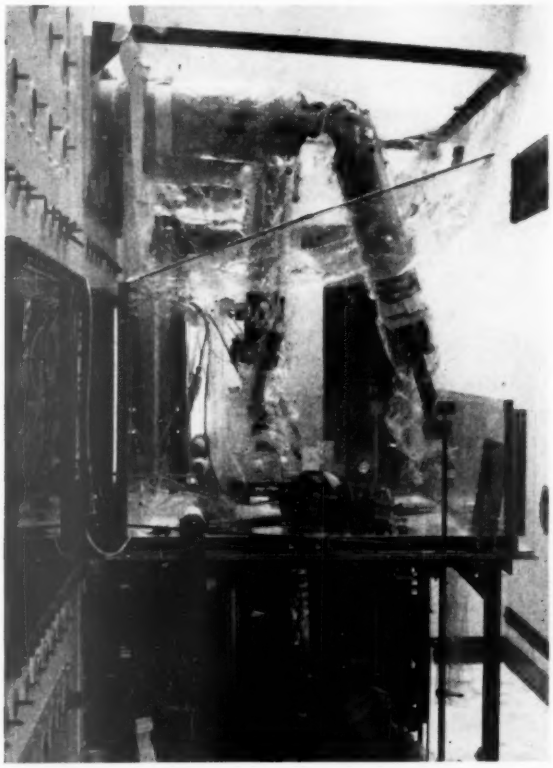

FIG. 3. New GE MAN-I plug-in master-slave manipulators give system considerable flexibility. In case of manipulator failure, slave unit can be pulled through cell wall—its plastic boot and the canopy remain inside. Another unit can be plugged in to continue hot operation. One complete arm can be changed from one operating station to another in about an hour

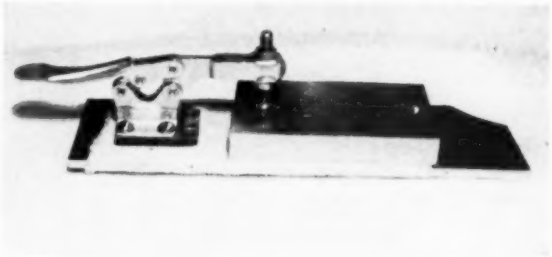

FIG. 4. Quick-release clamps fasten units to table tops. They permit equipment to be moved rapidly. For example, three-jaw chuck and drive mechanism, capstan device, and bolt chopper used for slug disassembly can be removed and re-installed remotely in about 30 min

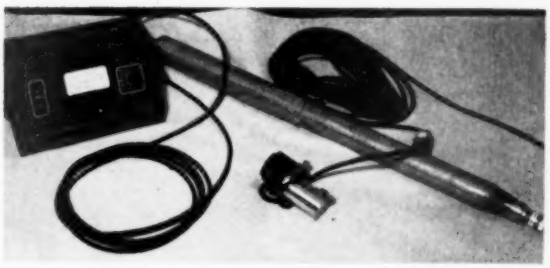

FIG. 5. Remotely operable survey instrument with a range of 0.1 r/hr to 100,000 r/hr is used to survey cell. Small pressurized ionization chamber (center) is used in cell; through-wall electrical plug (right) carries signal to console (left) on cell face. Instrument was designed by RML personnel and fabricated by the Jordan Instrument Co.

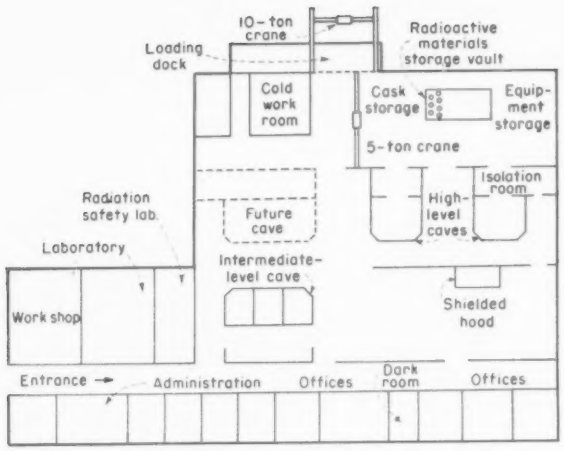

FIG. 1. Layout of Argonne National Laboratory's physics and metallurgy hot laboratory

Operating Procedures of a Hot Lab for Solid-State Tests

Management procedures and facilities of Argonne National Laboratory's hot lab for physics and metallurgy studies are described here. The lab includes two high-level cells and one three-cell intermediate-level cave

By E. W. RYLANDER
and R. A. BLOMGREN
Argonne National Laboratory
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MUCH OF Argonne National Laboratory's solid-state studies of irradiated materials are conducted in the facilities whose features and operating procedures are described here. The building is equipped with two single-cell high-level caves and one three-cell intermediate-level cave. A storage vault is used for confining and shielding highly-radioactive specimens. A variety of equipment is adapted for operation with master-slave manipulators.

Operational Procedure

The physics and metallurgy hot laboratory, whose layout is shown in Fig. 1, is managed by the Remote Control Engineering Division. This group schedules cave time, assists in planning cave work, aids in the design of new equipment and facilities, maintains equipment, and procures supplies.

The building's facilities are available to any of the laboratory's scientific divisions; personnel involved in setting-up and operating the cave are provided by the interested division. During the past year, the facilities have been used by representatives of every scientific division of the laboratory. Offices are available for the crews while conducting studies within the building.

Forms for requesting cave time, together with forms outlining operational procedure and radiation safety regulations, have been disseminated to interested laboratory personnel.

One-Cell Caves

The building houses two similar single-cell caves designed to shield 10,000 curies of 1-Mev gamma radiation. The 3-ft-thick magnetite-concrete walls enclose an area 10 ft wide, 6 ft deep, and 12.5 ft high. The overall weight of each cave is about 210 tons. Viewing facilities include two 36 × 30-in. zinc-bromide-solution windows at the front and two 30 × 20-in. windows at either side.

A 6 ft wide by 7 ft high entrance is provided at the rear of each cave. The entrance is shielded by two overhung doors; the sliding doors are of steel and are 14 in. thick and weigh about 10.5 tons each. The cave is lined with steel; the exterior is of concrete.

Each cave has a pair of ANL Model-6A master-slave manipulators. The load capacity of this model is about 10 lb. The electrically controlled indexing feature of this model allows the slave end to be retracted or extended up to a distance of 24 in. with the arms in parallel position. The manipulators are mounted on a carriage that traverses the full width of the cave. Movable shield blocks, mounted in the manipulator slot, guard against scatter radiation. The escape of direct radiation through the manipulator slot is prevented by a shelf of laminated steel plates located beneath the slot and within the cave. The traversing feature, together with the indexing feature, allows for coverage of 40 ft² of cave area. A 1,000-lb-capacity boom crane is mounted between manipulators and is used most often for removing plugs from lead-filled containers.

Three-Cell Cave

A three-cell intermediate-level cave, Fig. 2, was recently added to the labo-

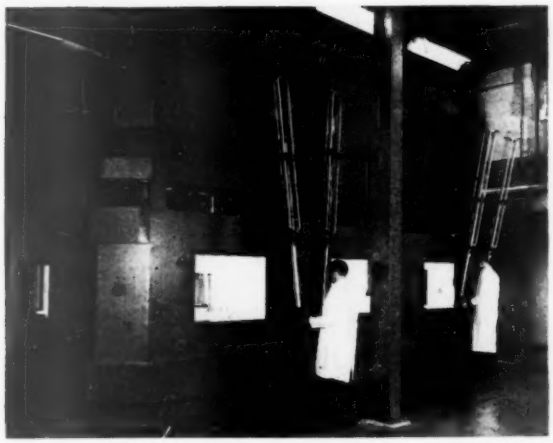

FIG. 2. Lower slot in shield of three-cell cave accommodates Argonne Model-6 master-slave manipulators. Upper slot will accommodate Argonne Model-8 manipulators. Cave is used primarily for metallographic investigations

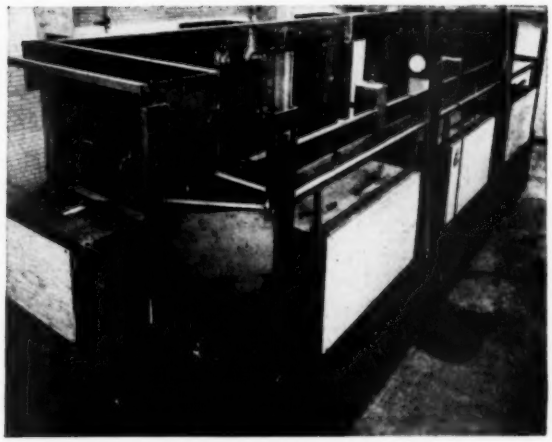

FIG. 3. Three-cell intermediate-level cave during early stage of construction. Note permanent installation of window frames and steel exterior

ratory. Designed to shield 100 curies of 1-Mev gamma radiation, the cave has a 2-ft-thick wall of high-density concrete. The cave was engineered and constructed by ANL personnel and will be used primarily for metallographic investigations.

Each cell's interior is 7 ft wide, 6 ft deep, and 12.5 ft high. The 8-in.-thick steel partitions between cells are movable above the 4-ft level to allow passage of manipulators and a planned crane from cell to cell. Each cell has a zinc-bromide-solution front window 58 × 30 in. In addition, each end cell has a side window 34 in. wide and 25 in. high.

The rear access doors roll away from the cave to provide a 5 ft wide by 8 ft high opening. The doors are of steel box construction and are filled with magnetite ore; steel punchings have been added in locations requiring higher-density shielding. The doors hang from trolleys riding on standard I beams and are opened by a hand-wheel drive.

Two slots have been provided, the length of the cave, above the windows. The lower slot provides an entrance for Model-6A master-slave manipulators, which are being used presently. These will be replaced with the newly designed Model-8 manipulators, which will enter the cave through the upper slot. The lower slot will then be shielded and adapted to allow for controlled inlet air for the ventilation system. Two-inch-thick steel accordion-type shield blocks are installed between each set of manipulators to allow traverse movement of the unit and to minimize scatter radiation.

The cave is equipped with a conveyor system for transferring mounted metallographic specimens from cell to cell. Briefly, the conveyor consists of nine small counterweighted buckets mounted on two bands of stainless-steel tape. The movement of the buckets is electrically controlled by push buttons located below each cell window. The conveyor is interlocked with the rear access doors in such a manner that the samples cannot be transferred into a cell with an open door.

As shown in Fig. 3, the window frames are an integral part of the steel structure and not removable. The inner surfaces of the frames were sand-blasted and painted with Amercoat-31 prior to installation. Care, however, had to be exercised to protect the Amercoat surface while the cave was under construction.

A study was made of the materials and labor cost involved in erecting wooden or steel forms at the outer cave boundary for containing the magnetite-concrete aggregate. Results of this study indicated that ¼-in.-thick steel sheets could be welded in place with appropriate tie bonds to the inner liner and, thus, act as a form as well as a permanent outer skin at a cost approximately equal to the cost of wooden forming. A painted steel exterior is easier than concrete to keep clean; and equipment and fixtures can be installed merely by drilling and tapping the plates.

Cave Equipment

Much of the recently procured equipment for the ANL hot laboratory is described elsewhere in this issue. Two additional pieces will be described briefly here: a power hacksaw with a peristaltic pump, and an impact testing machine.

A conventional Marvel High-Speed power hacksaw has been used during the past year with good results. Its principal application has been in cutting irradiated uranium. Conventional operation of the machine has been altered only to the extent of bringing the control box outside the cave. The machine has been mounted on wheels and a stainless-steel pan has been installed on the bed. The pan encompasses the saw blade, contains a V block and clamps for mounting specimens, and has features for chip collection.

A coolant, usually water, is used during the sawing operation. The coolant is circulated through commercial gum rubber, Neoprene or Tygon tubing by passing it through a commercially available Sigmamotor peristaltic pump. The pump is driven by a variable-speed hydraulic trans-

FIG. 4. Equipment and radioactive-material storage room. Entrances to isolation rooms are at left and center

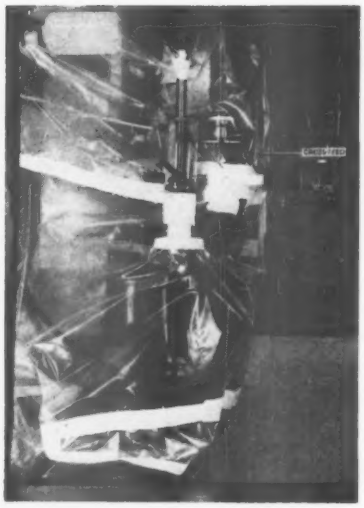

FIG. 5. Masking lathe (and other equipment) with plastic sheeting and tape facilitates decontamination

mission. A pumping rate of 250 gal/hr can be obtained by using 1-in.-i.d. × ⅛-in.-wall tubing. Since contamination is confined to the tubing, the peristaltic pump has been found to be a valuable tool for circulating radioactive solutions.

A Riehle Model PI-2 combination impact testing machine adapted for remote operation has been used successfully in the caves over an extended period of time.

Storage Vault

A storage vault is used for dry storage of radioactive specimens. The vault consists of sixty 8-ft-long 4-in.- and 6-in.-diameter tubes embedded vertically, to 1 ft above floor level, in high-density concrete. Each tube will accommodate four storage drawers, which consist of a steel cylinder with 6 in. of lead shielding near one end. The canned samples to be stored are placed in the drawer within the cave. The container is then drawn into a transfer cask mounted on a dolly. To place the drawer in the storage vault, a crane vertically positions the cask over one of the vault's holes; the cask end gate is then opened, and a grappling rod is used to lower the drawer into the shield.

Handling Equipment

A 10-ton-capacity crane is installed at the loading dock at the rear of the building for loading and unloading lead-filled radioactive-isotope containers. The storage area, Fig. 4, is equipped with a 5-ton-capacity crane. Containers and equipment are transported within the cave area by a battery-powered Moto-Truc Grip All Tractor. This tractor does not lift an object, but pulls or pushes it. The tractor has a draw-bar pull of 650 lb and has a designed capacity to move 10-ton loads.

Radiation Safety

Pocket dosimeters and film badges must be worn by personnel in the building. An office and laboratory for two members of ANL's Radiation Safety Group is maintained within the building. This group's representatives are available throughout the workday to take radiation measurements and make safety recommendations. Radiation surveys, including air sampling, are conducted daily. The work of the Radiation Safety representatives supplements that of the cave operators, all of whom are familiar with radiation-detection instruments.

Operating personnel are responsible for decontaminating the equipment they use and the cave proper after their experiments. Thus, contamination control is very important to the operating crew as well as to the Radiation Safety men and much consideration is given to the masking of equipment, as shown in Fig. 5, prior to the actual hot operations. Copious quantities of Bauer & Black No. 524 industrial adhesive tape and polyethylene sheeting are used to cover tables, equipment and cave floors. Indeed, the cave is lined with this adhesive tape to facilitate decontamination. For particularly contaminating cave operations, hood facilities are available to provide localized ventilation.

Upon completion of an investigation, airborne contamination is determined by drawing a measured volume of air through a filter paper. The filter paper is then checked for radioactive deposits to determine the necessity of wearing assault masks or supplied-air masks when entering the cave. The cave and equipment then are surveyed by Radiation Safety personnel.

High-level decontamination is accomplished within the caves. Low-level decontamination is performed in a room attached to the rear of each cave. These enclosures are referred to as isolation rooms; they are the final barriers to the spread of contamination. Highly contaminated pieces of equipment are sent to the extensive decontamination facilities of the Reclamation Division.

There is no permanent toe rubber area in the building. At times it is necessary to use an isolation room as a toe rubber area until decontamination is completed.

The floors of the entire cave area are scrubbed often. A Finnell electric scrubber is used. It features a rotating brush with detergent and water supply at its front and a squeegee and vacuum system at the rear.

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BOOKS

Isotopic Tracers

By G. E. FRANCIS, W. MULLIGAN and A. WORMALL (John de Groff, Inc., New York, 1954, xvi + 306 pages, $7.00). Reviewed by RALPH T. OVERMAN, Oak Ridge Institute of Nuclear Studies, Oak Ridge, Tenn.

This book is subtitled "A Theoretical and Practical Manual for Biological Students and Research Workers," and is graced by a foreword by G. Hevesy. Basically it is the material presented in a course on "The use of isotopes in biochemical and physiological investigations, especially designed to meet the needs of a selected group of undergraduates . . . and a few graduates in science . . . ." The course, given at St. Bartholomew's Hospital Medical School in London, consists of eight full-day periods with a one-hour lecture, starting each day, with the rest of the day being devoted to the six exercises included in this volume.

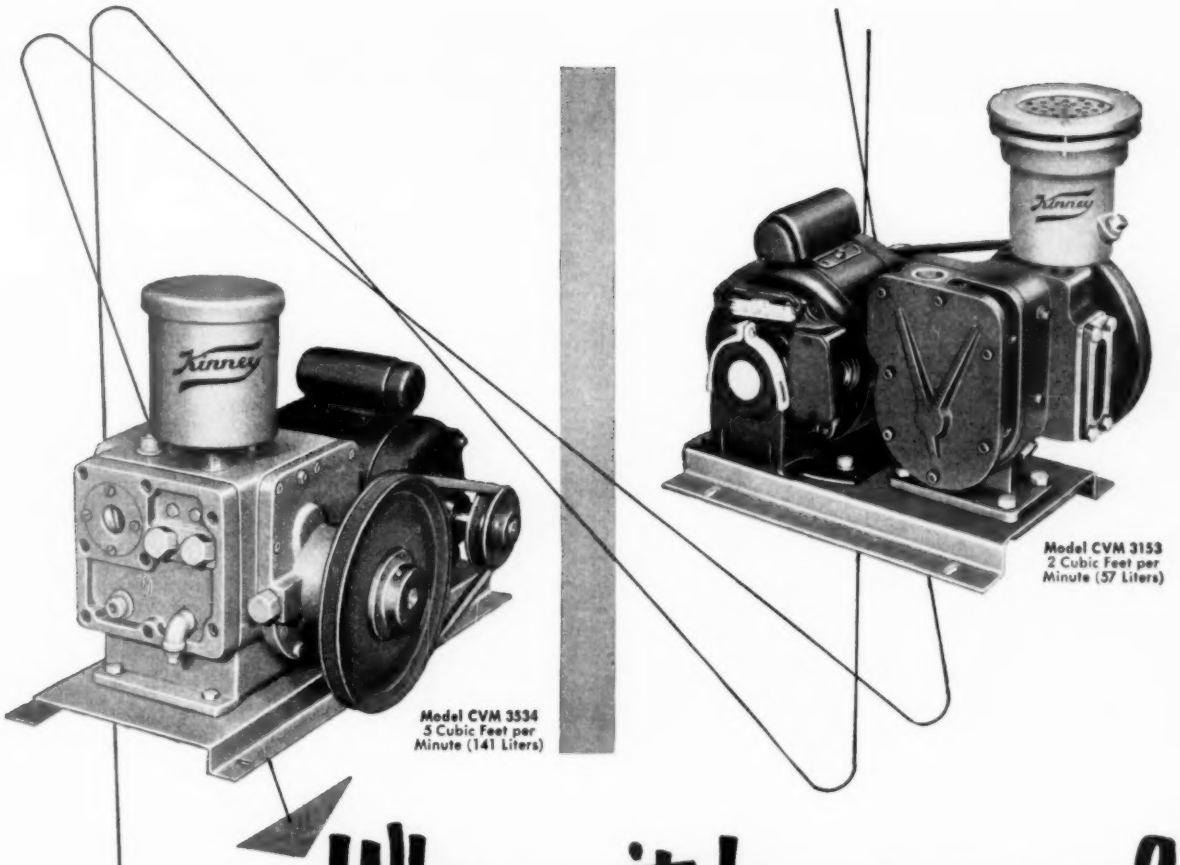
The first 200 or so pages are devoted to theoretical considerations, which are made up of 11 chapters having to do with the usual material of this type, such as atomic structure, measurement of radioactivity, hazards and precautions, and a relatively short chapter giving examples of the use of tracers in biology. One of the novel parts of this section of the book includes a number of pages of description leading to an experiment using stable isotopes. The description of the mass spectrometer and its use is certainly desirable in a book in this field. The presentation is adequate, considering the level of the book.

The next 35 pages of the text material includes fairly detailed descriptions of the six exercises included in the course. These are: (1) the use of Geiger-Müller tubes, (2) determination of atom percentage using N^{15}, (3) the incorporation of P^{32} into hen's eggs, (4) the persistence of P^{32}-labelled red cells, (5) preparation of I^{131}-labelled proteins, and (6) the use of labelled-protein antigen in serology. Also included are six pages of general outlines for additional experiments. Having had some experience in this type of pedagogy, I am inclined to question the author's statement that "it will not be difficult for those organizing the course to give the necessary amplification or to make suitable amendments . . . " In our experience, it is not simple to build good experiments even from a general outline. The additional experiments include a few pages on chromatography, distribution of P^{32} in mice, the localization of I^{131} in the thyroid, and a few lines each on preparation of iodinated compounds, determination of half-life, statistical consideration, and self-absorption curves.

Fifteen appendices are included, including physical characteristics of Harwell-produced isotopes, glossary, typical laboratory rules, various biology procedures such as micro-Kjeldahl experiments, corrections to observed counting rates, decay factors, 64 times table, and a fairly adequate index.

In reading through the book, one is struck by the absence of errors, either in typography or the material presented. There are several general criticisms of the book which may or may not impair its usefulness to workers in other areas. One of these is that the book includes much descriptive material without pointing out possibilities of the experimenter's encountering difficulties on which the authors have not touched. This is to say, that if a worker had only the material presented in this volume, he would be presented with a somewhat naive picture of radioisotope work. Quite understandably, additional material could neither be included in eight hour's lecture or in a few hundred pages of a book, but it would seem desirable to point out areas in which one might experience difficulty. For example, in the 6 pages on autoradiography, one sees no mention of artifacts. It is possible that the authors might be able to point out where to turn for answers to specific experimental problems. In this respect, the references are reasonably adequate, although one wonders at the omission of both Friedlander and Kennedy and Putman and Whitehouse. The latter is available now, and would be an excellent British supplement to this volume.

The selection of laboratory material was also surprising, although here again it is understandable that only typical experiments could be included. It would seem that the stable isotope and the serology experiments are rather specific to occupy ⅓ of the experimental material. A real criticism of the "practical" experiments is the specific nature of the directions which are related to a particular type



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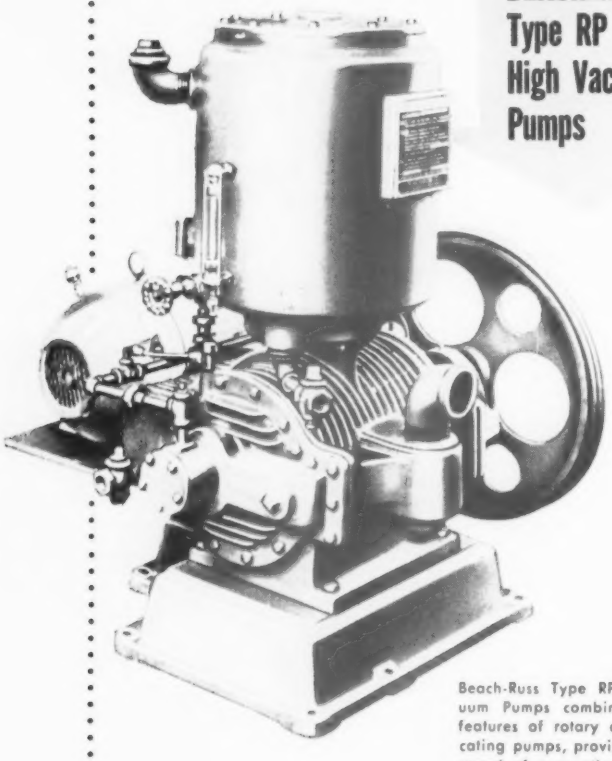

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of instrument and detector. For example, one frequently sees statements such as "Voltmeter selectro switch at '2': i.e., the output of Peak 29, which is focussed on collector No. 2, will be recorded on the voltmeter," and "The M6 tube is inserted in the E.R.D. castle for liquid counters." An alternate to this type of presentation would be to refer the students to the operating instructions furnished by the manufacturer of his particular instrument.

The general feeling one gets toward the book is that it is quite adequate from a topical standpoint; that is, it touches on most of the factors of theory and many of those in practice in a manner which would be suitable, either for a beginning student or as a reminder for the more advanced worker. It does not seem to be a text which can stand alone for serious workers expecting to do research with tracers. It seems as though somewhat more of the theoretical material is presented than would be required if a supplementary text is to be used. The volume will find its way into the library of biochemists and physiologists, but it may not be in a prominent place.

Introduction to Nuclear Engineering

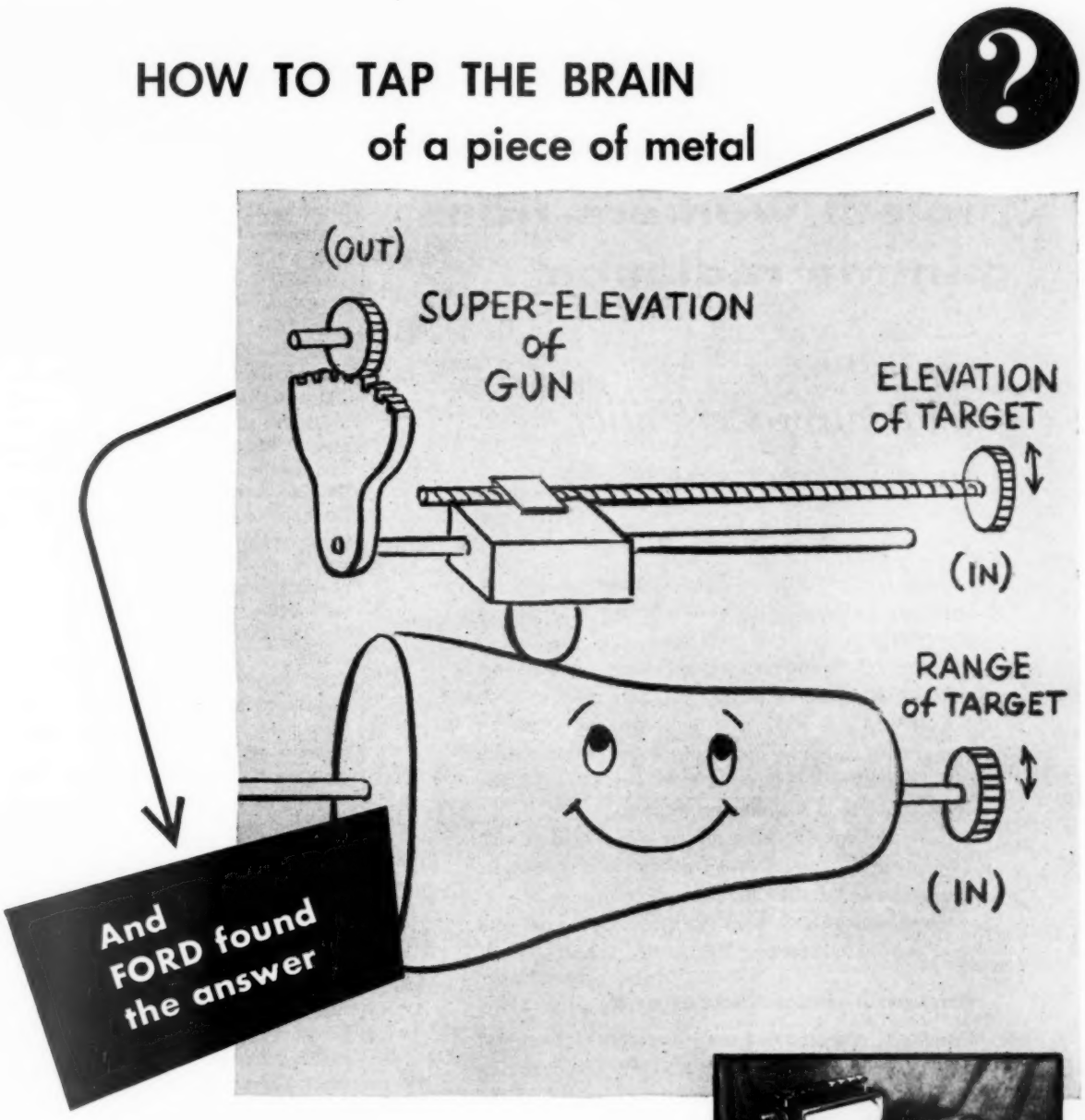
By RICHARD STEPHENSON (McGraw-Hill Book Co., Inc., New York, 1954, xii + 387 pages, $8.00). Reviewed by J. C. BOYCE, Argonne National Laboratory, Lemont, Ill.

The function of the engineer in the nuclear energy industry is not always sharply distinguished from the function of the physical scientist. It is right that the two should bring their separate, though overlapping, talents to bear on the problems to be solved. No fixed rules should be established that might impair the necessary cooperation.

But one must recognize that engineers and physical scientists tend to approach a problem from somewhat different points of view. On the average the engineer is more concerned with producing a worth-while product at a reasonable price, while the physical scientist is more interested in a real understanding of the phenomena and processes concerned.

Educationally, and for good historical reasons, the approach to nuclear energy has been from the physical science side. Practicing engineers and engineering faculties and students have found that most books on the subject of nuclear reactors, for example, seem

HOW TO TAP THE BRAIN
of a piece of metal



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to give a bewildering amount of detail on nuclear reactions and on reactor theory. The engineering problems of materials, heat transfer, structure and control systems have had a very minor place in the exposition. University teaching, if any, of this subject has tended to be done in the physics department.

The present book does much to restore the proper balance. It contains a substantial amount of physics, both of basic nuclear processes and analytical treatments of the neutron economy within a reactor. But this part is clearly stated, not unduly elaborate, and well documented with references for the benefit of anyone who wishes to pursue any portion in more detail. The chapter on the nuclear chain reactor is an excellent summary of all that has been declassified here and abroad on the several types of reactors now in operation. It is no mere catalog, but gives much of the advantages and limitations of each type. One may possibly challenge the authors definitions implicit in the tables of chapter 3, which permits the Materials Testing Reactor to be classified as a power reactor. The few errors the present reviewer was able to detect in the description of the reactors at this laboratory are too trivial to mention.

After discussions of nuclear physics, the fission process, existing types of reactors and the theoretical treatment of the neutron economy in a reactor, the author turns to those essential elements of shielding, materials of construction and instrumentation and control. These are the areas in which typical engineering design work must be done, conventional engineering modified by taking into account the effects of radiation.

It is a pity that the treatment has not included the most vital engineering topic in reactor design, the key problem of the removal and utilization of the heat from the reactor. The author probably felt that existing texts in heat transfer adequately covered the subject, but the book would certainly be more useful as a college text if enough had been given to show the magnitudes of the heat flux involved. Problems in this area would have rounded out the very excellent set of problems contained in the book.

The final chapters of the book cover the separation of stable isotopes, chemical separations and processes, and some special techniques of nuclear engineering. The basic theory of separation processes is very clearly

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stated, followed by discussion of several practical processes. Discussion of the gaseous diffusion process is almost entirely qualitative since practically no numerical data regarding this process have yet been declassified.

Particle accelerators are considered as a minor topic in the chapter on the separation of stable isotopes. Perhaps far fewer engineers will be employed on accelerator projects than in reactor projects in the foreseeable future. From that point of view, accelerators have a minor importance in nuclear engineering. But the present reviewer definitely disagrees with the statement: "The chief function of an engineer in the construction of particle accelerators will probably be the design of the biological shield surrounding the accelerator." Proper engineering design of structural elements, magnetic field control systems, provision for remote operation of all variables involved in tuning, to mention but a few points, have added greatly to the reliability and efficiency of the constant frequency cyclotron. The added problems of structural precision and rigidity, variable frequency control and magnetic field control of large synchrotrons certainly call for engineering solutions.

The volume ends with convenient tables of fundamental constants and conversion factors, common radioisotopes, neutron absorption cross sections at thermal energies, properties of moderation and some graphs of the variation with energy of certain cross sections.

This book will find many readers within the atomic energy program. It will also be a most useful text for an undergraduate course in nuclear engineering or in reactor engineering.

The Quantum Theory of Radiation

By W. HEITLER (Oxford University Press, London, 1954, xiii + 430 pages, $7.20). Reviewed by Gregor Wentzel, Institute for Nuclear Studies, University of Chicago, Chicago, Ill.

For almost twenty years, Heitler's "Quantum Theory of Radiation" has rendered excellent service as a standard source of information to both theoretical and experimental physicists. If you want to find out about radiative processes, as for instance the annihilation of positrons and electrons, with emission of either one or two light quanta, you find the theoretical cross sections listed in Heitler's book, together with a derivation by perturba-

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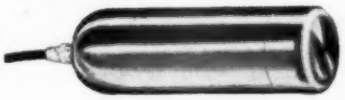

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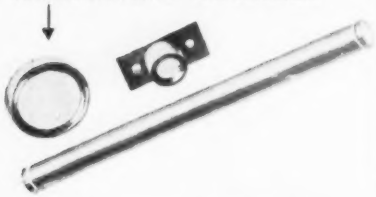
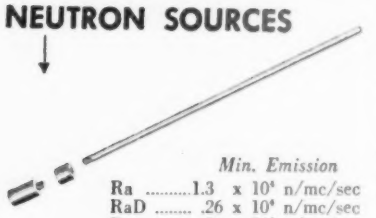


Beta Gauge.....Ra, RaD, Sr^{90}, Tl^{204}
Liquid Level Gauge.....Cs^{137}, Ru^{106}, Co^{60}
Standards.....Alpha, Beta, Gamma

NEUTRON SOURCES



	Min. Emission
Ra	1.3 x 10^4 n/mc/sec
RaD	.26 x 10^4 n/mc/sec
Po	.26 x 10^4 n/mc/sec

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tion techniques which is understandable to any one equipped with some basic knowledge of quantum mechanics. The last chapter summarizes the effects of radiative and collision processes on fast particles passing through matter, including photons.

All this is still true for the new, third edition. But the emphasis is shifted, or at least divided, between those more elementary aspects and the more sophisticated recent developments of quantum-electrodynamics. Great progress has been made, since 1947, in the elimination of the ominous infinities which tainted the old quantum theory of fields. The leading idea was that of "re-normalization": the results of theoretical calculations are expressed in terms of observed quantities, like the experimental mass of the electron, rather than the "mechanical" and "electromagnetic" masses separately. This program can indeed be carried through in electrodynamics, although unobservable quantities, like the electromagnetic mass, are still infinite. The actual handling of this strange situation requires some "wishful mathematics," as Heitler puts it (p. 354), indicating that this approach cannot be the last word on the problem. But the success of the method is conspicuous; among the "radiative corrections" which it permits to calculate, there are two which have been checked by accurate experiments, *viz.*, the excess magnetic moment of the electron, and the difference of the $2S_{\frac{1}{2}}$ and $2P_{\frac{1}{2}}$ levels of the hydrogen atom (the "Lamb shift"). The agreement with theory is perfect.

Some hundred pages of the new edition are devoted to these topics. As the Preface states, "elegance has taken second place when precision and clearness made this seem advisable." Feynman's and Dyson's powerful mathematical methods are explained but not fully exploited. Some instructive problems, like the radiative corrections to the Compton effect and the connected problem of the double Compton effect (one photon absorbed, two emitted; infrared problem) are treated in a nonrelativistic approximation. Didactically, this is certainly an advantage. As a first comprehensive representation of these matters in book form (in the English language), the book will be extremely welcome and useful to the student of modern theory.

The introductory chapters have been partly overhauled and revised in the same spirit of modernization. Various gages for the four-potential are distinguished right in the beginning. The longitudinal and "scalar" photons are treated by the elegant method of Gupta and Bleuler (quantization by indefinite metric). Dirac's relativistic wave mechanics, in conjunction with hole theory and second quantization, is introduced right away, without a previous detour through nonrelativistic wave mechanics. One page is devoted to positronium (electron plus positron bound) and its modes of decay. On the other hand, the reference to internal conversion of gamma rays seems to have disappeared. Several appendices have been added, for example, one on the angular momentum of light.

For those less interested in the modern achievements, care is taken to guide them as directly as possible to the simpler applications, contained in the chapters 5 and 7. A chart is provided at the end of the introduction to point out the logical connections between various sections.

The author was probably wise to resist the temptation to include more general fields, such as are used in meson theory. As it stands, the book is a comprehensive treatise on the quantum theory of the electromagnetic field. As such, it sets a new standard, and it can be highly recommended, both for private study and consultation, and as a textbook.

Optical Instrumentation

Edited by G. S. MONK and W. H. McCORKLE (National Nuclear Energy Series IV-8, McGraw-Hill Book Co., Inc., 1954, xxv + 262 pages, $3.75). Reviewed by A. G. SILVESTER, Remote Handling Facilities Unit, Atomic Power Equipment Engineering Sub Section, General Electric Co., Schenectady, New York.

This is an excellent book for those concerned with the optical problems encountered in the field of atomic energy. This book very clearly covers the unique problems that arise in viewing a radiation zone and describes in detail many of the special optical instruments designed and built during the period of 1943 to 1945 for the Manhattan District Project.

The book is arranged in two parts. The first part covers the major factors that must be taken into account in designing this type of optical system. These include angles of view, magnification, resolution (or sharpness of picture), radiation blocking, radiation damage to the exposed optical parts, ease of operator's use, brightness of field, and others. Where necessary,

sufficient mathematical theory behind the optical designs is presented to clarify the reasons for selecting a particular approach to the final design. Discretion was used in not including standard optical theory, which may be found in any textbook on the subject. However, the new applications of optics described in the book required new theory and formulas to be derived, and ample space is devoted to explaining the derivations of the new formulas.

The second part of the book is essentially a compilation of papers and reports issued by the staff of the Optics Section, Metallurgical Laboratory, University of Chicago, during the 1943 to 1945 period. These reports describe in detail many of the periscopes and allied viewers that were built for use during the early days of the development of atomic weapons.

There are sections devoted to the results of some early research to find suitable substitutes for optical glass with improved radiation resistance and better quality mirror surfaces.

Periscope designs described in detail include those types that are most applicable to Hanford-type pile operation and for observation at close range under 20 ft of water. The book also describes borescopes that enable one to study the surface details anywhere inside tubes up to 32 ft in length and less than 1½-in. bore. Several general viewing periscopes useful for viewing over-all operations inside a shielded area are discussed.

Much attention has been given in the book to four important problems. *A wide angle of view* is always desirable, even at greater than unity magnification, for reasons of operator orientation and, psychologically, because one's eyes cover quite a wide field under normal use. *Magnification* is desirable in many cases where it becomes necessary to have a closer look at an object or at an operation being performed. *Radiation blocking* is necessary for protection of personnel, and the required bending of image light rays is accomplished by the use of the prisms or mirrors. *The optical requirements* of prisms or mirrors are very strict, and improvements toward less loss of image resolution and light quantity are always welcomed by the optical designer. Lastly, the darkening of optical glass and damage to cements used in lens assemblies caused by intense radiation are added problems for the optical designer.

Because ten years of further research and development have elapsed since the issuance of these papers, the second

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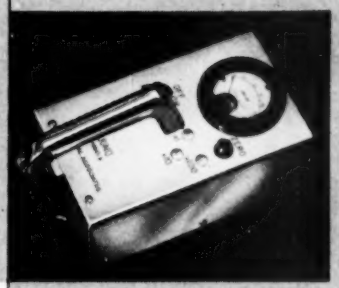

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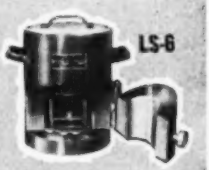

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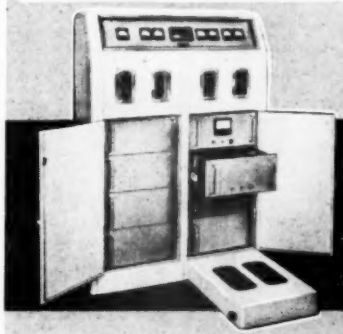

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part of the book is naturally outdated by knowledge acquired more recently. Zinc bromide is now the most universally used liquid for viewing windows, and there are new radiation-resistant glasses available for optical use. Also, much progress has been made toward gaining depth perception with periscopes. Incidentally, the larger share of this new work has been conducted by the Argonne National Laboratory with Dr. Monk as a very active consultant and participant.

The contents of this book should prove very valuable to anyone concerned with viewing in any kind of zone where it is hazardous for personnel to enter. Considering that the future of atomic energy will bring an expansion of other uses of nuclear physics than power and weapons application, such as biological, medical, food production and preservation, tracer "tagging" for identification, materials research and production, etc., it is fortunate indeed that a book has been published with so much helpful information (including references) on this special field of optical instrumentation.

BOOKS RECEIVED

Modern Physics for the Engineer, by Louis N. Ridenour, McGraw-Hill Book Co., Inc., 1954, xix + 499 pages, $7.50. (*To be reviewed.*)

Atomic Energy and Its Applications, by J. M. A. Lenihan, Pitman Publishing Corp., New York, 1954, xiii + 265 pages, $4.00. (*To be reviewed.*)

Introduction to Atomic and Nuclear Physics, by Henry Semat, Rinehart and Co., Inc., New York, 1954, xii + 561 pages, $6.50. (*To be reviewed.*)

The Psychology of Invention in the Mathematical Field, by Jacques Hadamard, Dover Publications, Inc., New York, 1954, xi + 145 pages, $2.50 clothbound, $1.25 paperbound. A republication of the first edition published in 1945, this book considers the origination of ideas in scientific invention.

A Treatise on Electricity and Magnetism, by James Clerk Maxwell, Dover Publications, Inc., New York, 1954, 1,082 pages, $4.95. This book is the first American edition of Maxwell's classic work. The original two volumes, edited by J. J. Thomson, are combined in a single, unabridged volume.

ALSO OF NOTE

Industrial Ventilation Manual. Published under the auspices of the Ameri-

can Conference of Government Industrial Hygienists, this third edition provides information on air-cleaning devices, laboratory hoods, and testing discharge stacks. *Committee on Industrial Ventilation, Box 453, Lansing 2, Mich., $3.00.*

Atomic Energy Act of 1954. Copies of Public Law 703, 83rd Congress, are available. *Superintendent of Documents, Government Printing Office, Washington 25, D. C.*

The Infra-Red Spectra of Complex Molecules. This 323-page book, by L. J. Bellamy, reviews the data on which infrared spectral correlations are based. Using wave numbers, he discusses only empirical interpretations. *John Wiley and Sons, Inc., 440 Fourth Ave., New York 16, N. Y.*

Radioactive-Waste Disposal in the Ocean. National Bureau of Standards Handbook 58, 31 pages, was prepared by the Subcommittee on Waste Disposal and Decontamination of the National Committee on Radiation Protection. It presents factors to be considered and proper methods for disposal of long-half-lived or highly radiotoxic isotopes. *Government Printing Office, Washington 25, D. C., $0.20.*

S.L.A. List of Translations, October 1953. This supplement lists nearly 700 titles received in the Pool since October, 1953. Approximately 2,000 translations from all languages except Russian are on file. *Special Libraries Association Translation Pool, John Crerar Library, 86 E. Randolph St., Chicago 1, Ill., $1.00.*

Smithsonian Physical Tables. This 9th revised edition, compiled by W. E. Forsythe, contains 901 tables plus 41-page index. New tables are on atomic and nuclear physics; extended tables are on cosmic rays, electronics, plastics, aeronautics, and radiation. *Distribution Section, Editorial and Publications Div., Smithsonian Institution, Washington 25, D. C., $9.00 (paperbound), $10.00 (clothbound).*

Copper Industry Quarterly Report. This new quarterly, issued by Business and Defense Services Administration, covers supply, distribution, consumption, exports and sales trends for copper raw materials, refined copper, copper-base scrap and foundry, brass and wire mill products. *Superintendent of Documents, U. S. Department of Commerce, Washington 25, D. C.*

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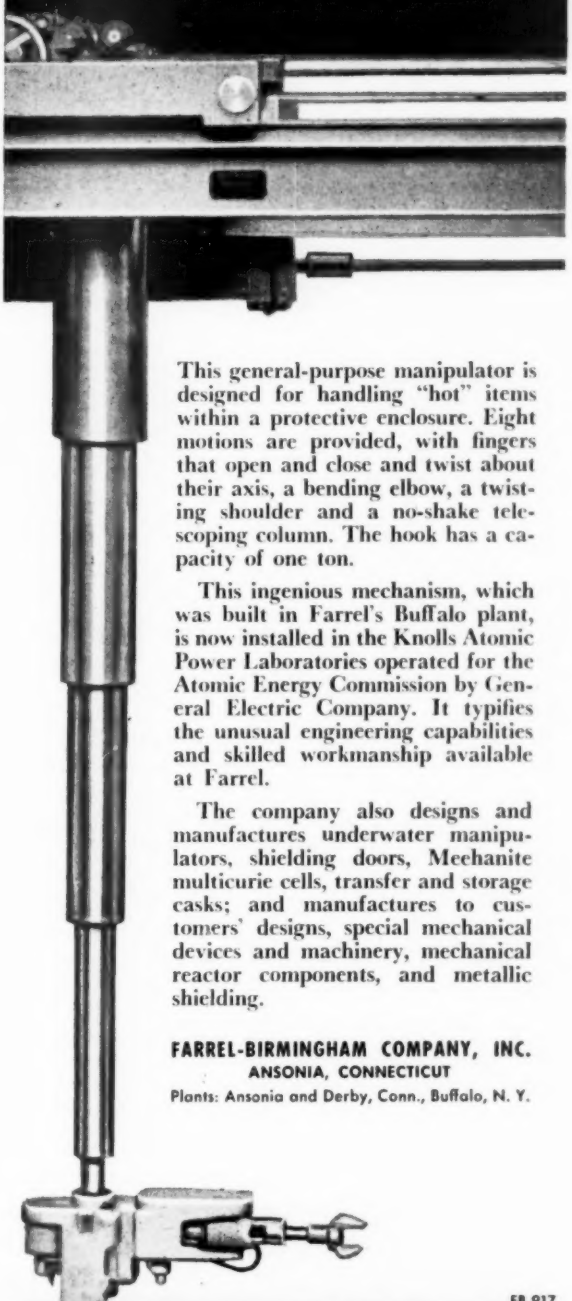

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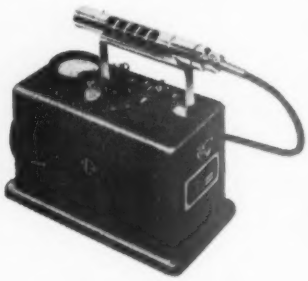

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Printed copies of the letters patent may be obtained from the Commissioner of Patents, Washington 25, D. C., at 25 cents a copy, payable by check or money order. Specify the patent number and title when ordering.

These descriptions are based on abstracts furnished by the Index of Inventions, maintained by the Government Patents Board, Washington, D. C., and by the U. S. Atomic Energy Commission.

Beam defining apparatus* (2,674,698), John L. Danforth, Lloyd R. McIntosh —Particle-accelerator collimator shapes beam in either of two directions independently. Separate viewing and measuring components are mounted on reciprocating supports.

Exposure capsule handling device* (2,675,487), Edward R. Tompkins, Myron B. Hawkins—Bore in shielding material of container for transporting radioactive material receives capsule. Device in bore withdraws capsule and locks in lifted position.

Radiation measuring instrument† (2,676,268), Marvin G. Schorr—Resistor and current meter are in series with detector with diode between detector and resistor, second electron tube with grid connected to anode of diode, and cathode follower responsive to voltage changes on grid of second tube; latter is connected in feedback to cathode of diode for impressing voltage change across resistor and meter equal and opposite to diode voltage change.

Phase meter* (2,676,299), Minard A. Leavitt, Bob H. Smith—For measuring phase angles between electrical signals, phase-meter input terminals are connected to conductors having voltages with 120-deg phase angle. Voltmeter connected to rectifier measures rectified voltage between input terminals of voltage divider joined at central terminal of phasemeter and voltage difference between center terminals and one-half voltage of one input terminal.

High-frequency power transmission line for cyclotrons and the like* (2,676,309), William J. Armstrong—Stacked sheet conductors are interleaved with dielectric sheets; contact terminals of alternate conductors at one end are connected together and to other source terminal. Terminals of alternate conductors at opposite end are connected together and to one load terminal. Intervening conductors at opposite end have contact terminals connected together and to other terminal of load.

Electronic scaling circuits* (2,676,756), Willard Q. Gulley—Circuit for radiation counter comprises stages in cascade; each stage includes pair of trigger tubes fed through rectifier and operating alternately. Recorder coupled to last stage records predetermined multiple of pulses. Electric discharge device, coupled to output of one trigger tube in two stages and to input circuit of a number of stages, resets system when tubes are blocked and changes multiple of pulses recorded.

Catalytic apparatus for isotope exchange* (2,676,875), Frank T. Barr—Liquid and gas pass in countercurrent flow through elongated shell so that liquid absorbs isotopes from gas; number of catalyst beds are positioned in path of gas. Bubble plates are between catalyst beds; liquid conduit bypasses beds. Evaporator for isotope-enriched liquid is at exit end of shell.

Ion source* (2,677,060), William M. Woodward, Lincoln G. Smith—Tungsten rod of arc-discharge anode is coated on one end with cobalt: thermionically emissive cathode faces coated end. Discharge ionizes coating; magnetic field distributes discharge over wide arc.

Ion source* (2,677,061), Robert R. Wilson—Hollow block contains gaseous atmosphere and has exit slit for ions in one wall. Arc discharge is channelized to narrow region directly behind and parallel to slit. Ionization density is increased at exit slit.

Frequency measuring instrument* (2,677,104), Robert L. Chase—Instrument for measuring variation of synchrotron oscillator utilizes two amplifiers and recorders to compare unknown fre-

quency to standard oscillation source over controllable time interval.

Coincidence circuit* (2,677,759), Richard Madey—Circuit for use with nuclear counting equipment comprises diode input tubes, output tube, dropping resistor between anodes of input tubes and positive side of potential source and second dropping resistor with capacitor in series with positive potential and input-tube cathodes. One of a pair of unidirectional devices is coupled to control grid of output tube.

Ion source* (2,677,770), Lincoln G. Smith, Julian E. Mack—Support of source-metal anode is cooled; thermal conduction between anode and support is variably controlled to control melting and vaporizing of anode material.

Ion source* (2,677,771), Clarence M. Turner—Means are provided for supplying each a-c-connected arc electrode with ion-source material and for starting arc by bombarding electrodes with accelerated electrons.

Neutron thermometer* (2,677,772), Robert J. Moon—Thermopile in form of continuous strand containing alternate hot and cold junctions is wound into parallel segments so that hot junction of each segment is adjacent to cold junctions. Hot junctions are coated with material having high neutron-capture cross section, e.g., boron produced by thermal decomposition of diborane.

Linear cathode* (2,677,778), William R. Baker, David A. Vance—Dispenser-type cathode comprises metal trough having connections extending from ends and cover defining enclosed reservoir; volatile activating material in reservoir vaporizes by heat and diffuses through porous-metal cover.

Head seaming device* (2,678,014), Myron B. Hawkins—Device for capping cylindrical containers having lips, for holding charges of fissionable material in nuclear reactors, consists of capping machine having fixed backing rollers engageable with container and spinning wheel or roller, which can be manually operated toward fixed rollers to spin skirt of thin-sheet-metal cap underneath lip of container in tight contact.

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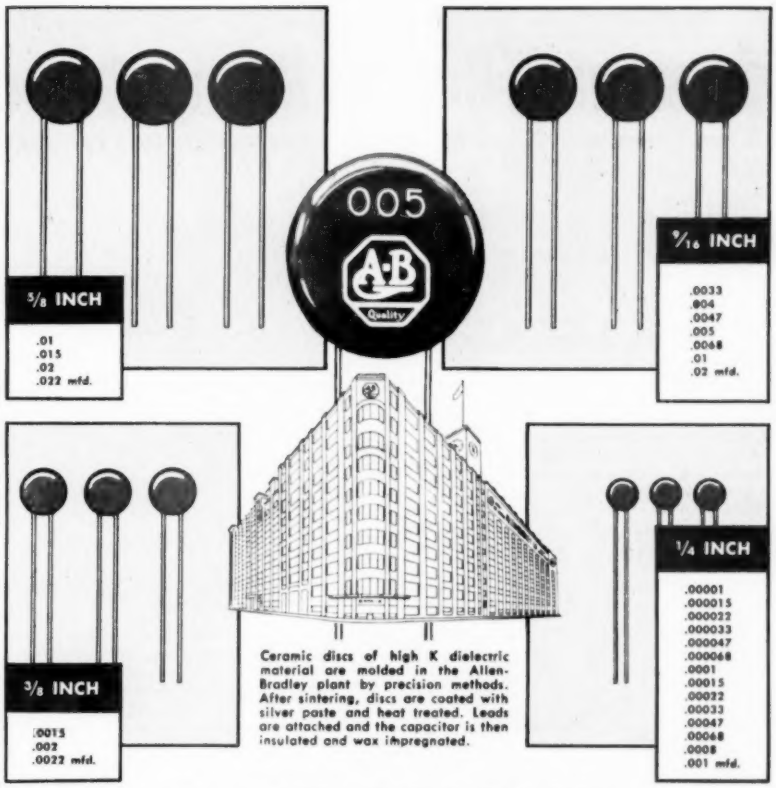
* Administered by Chief, Patent Branch, U. S. Atomic Energy Commission, Washington 25, D. C.

† Administered by the Office of the Judge Advocate General, Department of the Army, Washington 25, D. C.



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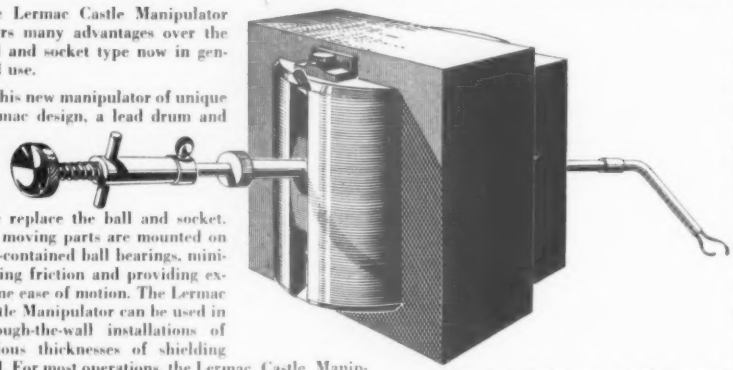

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LETTERS

Rebuttal on Sources

DEAR SIR:

The writers would appreciate your courtesy in publishing the following reply to Dr. Henley's criticism, (NU, Sept. '54, p. 76) of our article "Relative Merits of Cathode Rays and Gamma Radiations" (NU, Feb. '54, p. 32).

1. A 75% over-all efficiency is not the maximum attainable. On the contrary, under certain conditions efficiencies of utilization greater than 85–90% are possible, and under special circumstances, they may even approach 95%. For instance:

(a) Irradiation of a number of thin films of material at the same time, using 3–5-Mev cathode rays, may approach utilization efficiencies of 95% by varying the speed of the films as they pass along the belt. The rates of speeds are dependent on the ionization-in-depth curve for the particular energy level electrons.

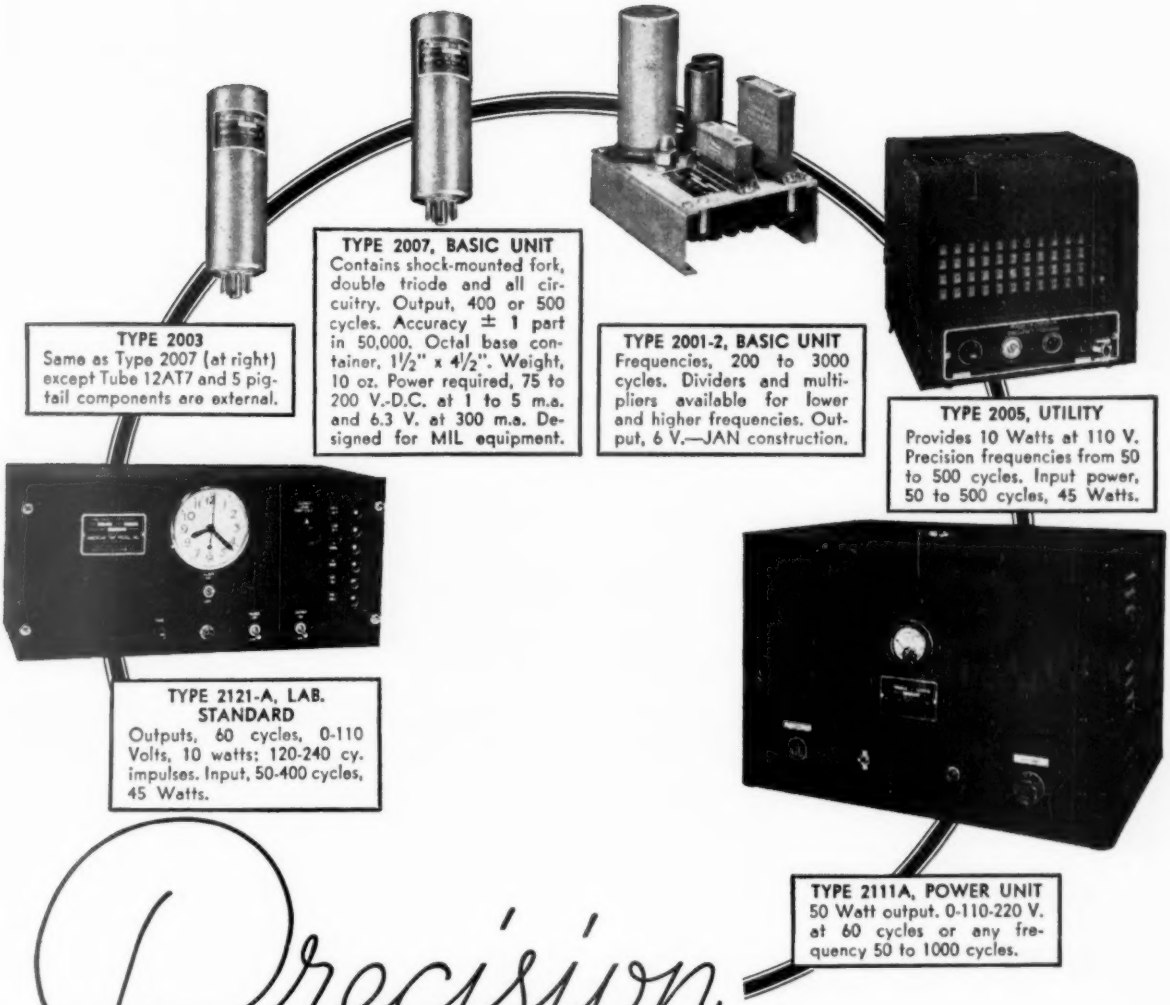
(b) In addition, irradiation by combination of high-voltage plus low-voltage cathode rays will increase the utilization efficiency far in excess of 75% by increasing the ionization near the surface.

2. It should be indicated that our article was first presented on June 26, 1953, by invitation, at a symposium on Radiation Sterilization sponsored by the National Research Council, Committee on Foods, at the Masachusetts Institute of Technology. This article was submitted to NUCLEONICS on July 21, 1953.

The Duffy paper, which was published in November 1953 and referred to by Dr. Henley, had not come to our attention at that time.

We would, however, like to point out that the Vitro efficiency figures, presented by us, are quoted directly.

Duffy has not clearly shown that these are not maximum efficiencies; to the contrary, he has merely made a statement, with no supporting data, or with any indications of how to improve the geometry to obtain better utilization than the Vitro figures, cited by us. Moreover, there is plausible indication that the simplifying Vitro assumption "a unit hollow cylinder, processing a total of 363 cans of meat, is equivalent to irradiating a solid core of meat 12 inches in diameter, within the cylinder," may be optimistic and that the



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efficiency may be much less than the figures given by the Vitro Corporation. This is due to the fact that the Vitro calculations do not take into account concepts of geometry of absorber in accordance with modern conventional processing techniques in so far as food microbiology is concerned. Further details on this are available in a paper by the writers presented at the June, 1954, meeting of the Institute of Food Technologists at Los Angeles and accepted for publication in *Food Technology* in the near future. We are unaware of any published calculations that indicate efficiency of utilization of gamma rays of 75% or more.

3. The 4% efficiency of utilization of the plane source was calculated by us in exactly the same manner as the other Vitro efficiencies quoted, using exactly the same equations as Vitro used. The data on through-put and isotopic requirements of the plane source are given in KLX-1379, and the methods of calculating efficiency are given in KLX-1385.

Moreover, we feel it should be pointed out that only part of our statement regarding the plane source was quoted in the criticism, and we feel that the *entire* statement should be quoted and not taken out of context, namely: "calculations made by us, *using Vitro data* (*6, 7*), indicate an efficiency of utilization as low as 4% for plane sources."

4. Figures 4 and 5 were a part of the paper presented at the National Research Council meeting on June 26, 1953 referred to above, and were acknowledged as a footnote in the published article to Dr. Davison of our staff. The Henley reference cited in his communication was not published until October, 1953, almost four months later than the date on which our paper was presented. Therefore, it is impossible that the information on which Figs. 4 and 5 were drawn could have been obtained as a reference from Henley's article. It is, of course, gratifying to us that Figs. 4 and 5 have been confirmed by him some four months later.

The Tarpley *et al.* reference given as "BNL communication, August, 1952" is not familiar to us; we are unable to check it in the library sources available to us.

We wish to indicate here, as we have recorded elsewhere, that in our opinion the Vitro data is important and that those who prepared the Vitro reports are to be commended on the design

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22M	5-30 KV 3 ma. @ 20 KV	—
22MR	5-30 KV 3 ma. @ 20 KV	0.5%
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23CR	5-40 KV 1.3 ma. @ 25 KV	0.5%
23M	5-45 KV 1.5 ma. @ 30 KV	—
23MR	5-45 KV 1.5 ma. @ 30 KV	0.5%
24C	5-50 KV 1 ma. @ 35 KV	—
24CR	5-50 KV 1 ma. @ 35 KV	0.5%
24M	5-55 KV 2 ma. @ 30 KV	—
24MR	5-55 KV 2 ma. @ 30 KV	0.5%
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studies made by them, which have been referred to in this letter and in our article. The paper to be published in *Food Technology* was made possible only as a result of the fundamental calculations and design studies made available through the Vitro report, on which we have been able to apply our own thoughts on container geometry and food microbiology.

We very much appreciate the privilege of publishing this reply, which should clarify the misunderstandings that apparently existed.

—S. A. GOLDBLITH and B. E. PROCTOR

Department of Food Technology
Massachusetts Institute of Technology
Cambridge, Massachusetts

First Tritium Production

DEAR SIR:

In the introduction to "Biological Applications of Tritium" (NU, Sept. '54, p. 31), R. C. Thompson dates the first production of tritium with a paper published in 1939.* The reference should have been to papers of Oliphant, Harteck and Rutherford appearing in 1934.†

The presence of tritium in the atmosphere was reported by Faltings and Harteck in 1950.‡

Dr. Harteck has been in the United States on the staff of Rensselaer Polytechnic Institute since 1951.

—J. B. CLOKE

Head, Department of Chemistry
Rensselaer Polytechnic Institute
Troy, New York

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* L. W. Alvarez, R. Cornog, *Phys. Rev.* **56,** 613 (1939).

† M. L. Oliphant, P. Harteck, Lord Rutherford, *Nature* **133,** 413 (1934); *Proc. Roy. Soc.* **A144,** 692 (1934).

‡ V. Faltings, P. Harteck, *Z. Naturforsch.* **5a,** 438 (1950).

NEXT MONTH . . .

. . . the full gamut of NUCLEONICS departments will return. Some are missing from this issue because of the extensive special report on Hot Labs. The December issue will include Cross Sections, Nuclear Engineering, Technical Advances, Industrial Applications, Books, News, Products and Materials, and the Editorial page.

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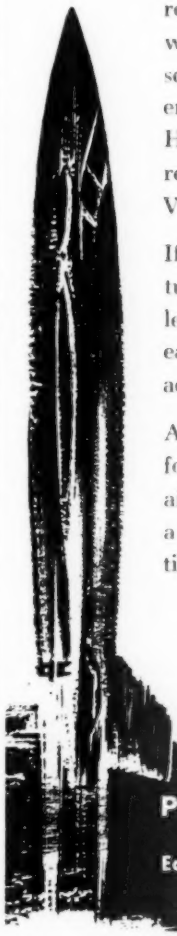

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NEWS

AEC Is Expanding Feed Materials Facilities in $67-million, Three-Year Program at Four Sites

Another round of expansion of the Atomic Energy Commission's feed-materials program is underway. A total of $67-million has been allotted to construction on four facilities to produce metallic uranium and uranium hexafluoride from ore concentrates. These materials are fed to reactor facilities and gaseous diffusion plants that produce enriched fissionable material.

Plans call for completion of this expansion in three years, with a significant part of construction work to be awarded on the basis of competitive lump-sum bids. Architect-engineering services are on a cost-plus-fixed-fee basis.

Largest project is a $33.3-million plant at Weldon Springs, near St. Louis, Mo. When completed, the plant will be operated for AEC by Mallinckrodt Chemical Works and will employ a labor force of 1,300. A purification unit, uranium chemistry unit, and uranium foundry will be built on the 200-acre site.

Existing St. Louis facilities operated by Mallinckrodt will be expanded in conjunction with the Weldon Springs project, at a cost of $6.5-million. Construction work on these two projects will reach its peak in late 1955. Blaw-Knox, Pittsburgh, Pa., is the architect-engineer for both projects.

Modifications of existing buildings and equipment at the Fernald, O., feed materials production center will cost $20.1-million. This facility is operated by National Lead Co. Singmaster & Breyer, New York, is the architect-engineer.

At the Paducah, Ky., plant, an existing feed plant will be enlarged and a new 4,000-ft² building erected. AEC will spend $7-million for this phase of the expansion program. Union Carbide and Carbon Corp. operates the plant; Gissels & Vallet, Inc., Detroit, Mich., is the architect-engineer for the expansion.

AEC, in announcing the expansion program, did not spell out the reasons for it. But some insight is provided in a recent speech by Jesse Johnson, director of AEC's division of raw materials. He pointed out that defense requirements have continually expanded: military reactor power plants are being developed and will require uranium over and above weapons requirements. Reviewing progress of uranium mining, Johnson revealed that domestic ore production "has been doubling every 18 months, and even greater expansion is ahead." He listed big increases in foreign production too.

Still unanswered is how ore supplies match up with AEC production requirements; perhaps they're catching up with present capabilities. The biggest question is whether this current expansion is just to meet military requirements, or whether it's part of long-range plans for industrial and international uranium supplies.

Dow and Detroit Edison Splitting Power Group

Dow Chemical Co. has formally asked Atomic Energy Commission approval to withdraw from the Dow-Detroit Edison nuclear power project. At the same time, Detroit Edison has announced plans to expand and change the name of the industrial atomic group from "Dow-Edison and Associates" to "Atomic Power Development Associates." The expansion will involve adding nine more companies—so far unidentified—to the roster, bringing the total to 34.

Since 1951 the group of companies engaged in the Dow-Edison project has been studying the feasibility of utilizing atomic fission as a source of economic commercial power and useful nuclear byproducts. The participants have already invested or committed $4-million of their own funds to the project. Work has advanced from the planning stage to actual laboratory testing of reactor parts, and Walker Cisler, Detroit Edison president and chairman of the project management committee, recently predicted actual construction of an atomic-powered electric generating plant in Michigan by 1956.

Group effort will go forward, without Dow, concentrating on design and eventual construction of an economic commercial power reactor. Dow will continue independent nuclear research, probably under a separate AEC industrial participation agreement, concentrating on utilization of nuclear reactor byproducts rather than reactor development.

Leland I. Doan, Dow's president, explained his company's decision by saying studies had reached a stage where participating companies have crystallized their individual interests.

"In our case," Doan said, "we are primarily interested in the chemical aspects of atomic power and the possible utilization of nuclear reactor byproducts in the chemical industry. We have gained basic knowledge concerning the technology of nuclear reactors from the project, but from this point on it is not logical for us to continue participation in a program directed at the development of atomic power as such."

Doan added that Dow has been doing considerable research on the application of radioactive materials apart from its work with the group.

Speaking for Edison, Cisler said, "The Dow people have contributed much to our present understanding of the basic problems related to the development of atomic power and other peacetime atomic uses. Our studies have progressed to the point where the paths we believe we should follow are clearly defined. It is now becoming increasingly evident that the development of atomic energy for the generation of electricity should be realized at the earliest possible date, and our efforts must be directed chiefly toward that goal." Cisler concluded that the Atomic Power Development Associates group would continue work on an atomic power reactor of the breeder type.

Battelle Institute Plans $1.5-million Expansion

Facilities for nuclear-energy research at Battelle Memorial Institute, Columbus, O., will be almost doubled when a

planned $1,535,000 expansion program is completed. Construction of a 1,000-kw swimming-pool reactor, a reactor development laboratory, and a nuclear fuels laboratory is scheduled to start in January. A 2,000-curie cobalt-60 source is to be ready for use this month.

All of the facilities will be available to industry for contract research. The reactor will provide an intense neutron source; one of its principal uses will be for exponential experiments on power-reactor cores. The reactor development laboratory will be equipped for critical experiments; large power reactors can be mocked up and evaluated experimentally. The nuclear fuels laboratory will provide hot-lab facilities for chemical, physical, and metallurgical studies of reactor fuels.

These three facilities will be built on a 397-acre tract near West Jefferson, O., 15 miles from downtown Columbus.

American Nuclear Society Established October 11

After making preliminary plans under the name Society of Nuclear Scientists and Engineers (NU, Sept. '54, p. 79), a committee of 29 leaders of the atomic energy field formally established the American Nuclear Society last month. An additional 200 senior nuclear scientists and engineers have accepted charter membership in this first independent professional society in nuclear technology.

Besides planning a three-day conference June 27–29 at Pennsylvania State University, State College, Pa., the group has offered to assist Atomic Energy Commission chairman Strauss in implementing the international nuclear energy conference proposed for next spring by President Eisenhower and Secretary of State Dulles.

Chairman Strauss, in a congratulatory message to the society's founders, said "every American should be encouraged by this demonstration of confidence in the future of peaceful application of atomic energy . . . For myself and on behalf of [AEC], may I extend to the Society congratulations and best wishes for a fruitful and enduring existence in the interest of science. If [AEC] can be of any assistance, please let me know."

W. Sterling Cole, chairman of the Joint Congressional Committee on Atomic Energy, said he deems it "particularly fortunate" that the new

The Editors Hear

Qualifications for licenses for individual operators of nuclear power reactors, as required under Sec. 107 of the new Atomic Energy Law, are being drawn up by AEC. It may be necessary for an operator to have three months' training on a reactor similar to the one he would be licensed for.

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Lockheed Aircraft Corporation has formed a six-man group at its Marietta, Ga. plant to look into nuclear problems.

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Selection of the Fort Belvoir site for the Army Package Power Reactor has not yet been approved by the AEC advisory committee on reactor safeguards. Some committee members question the site's proximity to Washington.

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Prospective industrial fabricators of fuel elements for the Army reactor will be permitted to test them free-of-charge in the Materials Testing Reactor in Idaho on the same basis as the Oak Ridge National Laboratory elements will be tested.

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One university that will build a reactor on its campus has obtained $500,000 insurance coverage from a major company.

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Before his term expired, Eugene Zuckert, former AEC commissioner, recommended to the Joint Committee on Atomic Energy that AEC be made a political body in the sense that a new President be enabled to appoint three new commissioners upon his taking office.

•

One interpretation of the statutory requirement that AEC purchase fissionable material from industrial reactor licensees for 7-year period is: 7-year period starts from date of establishment of a particular "fair" price. This would apply to all licensees. At the end of period, AEC could re-establish price for another 7 years, or could set a lower or higher one.

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Although there are recurrent rumors that dual-purpose reactor proposals are being considered favorably by AEC, there is a wide split within AEC on the desirability of pushing such plans.

•

Although not specifically tagged for such use, there is money in AEC's budget that can be diverted to support of AEC-proposed "reactor of the year," the joint industry-AEC ventures suggested by L. R. Hafstad. Industry has had mixed reactions to the idea. Some companies are looking up proposals. Others prefer to steer clear of what they call "complex government entanglement."

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Diamond-Alkali is building a hot lab for fuel processing work in connection with its nuclear power study contracts.

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It appears that the new statutory requirement that AEC have a "division or divisions . . . for civilian uses of atomic energy" will be said by AEC to be met by several existing divisions.

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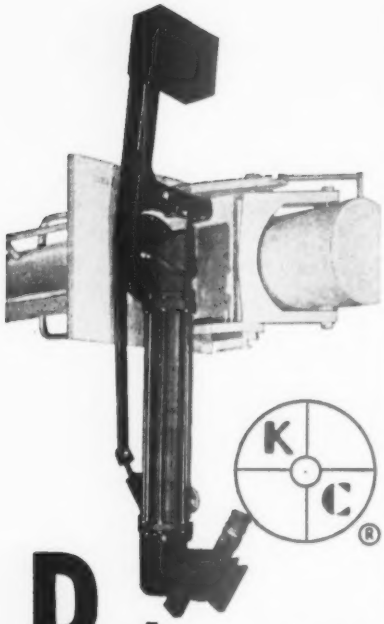
A midwestern university is examining the feasibility of using nuclear power to heat its campus buildings.

•

A so-called reactor fuse safety mechanism is still being considered by AEC for installation in power reactors. During a power surge, the device would be radiation- or heat-triggered to reduce reactivity, probably by dumping high-cross-section absorber material into the core. Although it would be a step in the right direction, it is not regarded as the ultimate in reactor safety.



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Sidelights

Australians battle over reactor for education. Professor Messel, of Sydney University, says that experimental low-power nuclear reactors should be used for training. But Professors Baxter, of Australian AEC, and Oliphant, of Canberra's National University, say they are of no use, want Australian-trained physicists to go abroad for advanced training. Messel is now on a world tour to survey thinking on research reactors.

●

Miners resist radioactive dumping. Plans to dump waste from Britain's atomic energy center at Harwell, into four disused mines in the Forest of Dean, are being opposed by local mining groups. Issue is not contamination hazard—Sir John Cockcroft has reassured miners on this point; coal miners think pits might be mined again in future.

●

AEC schedules Nevada test. Advance warning of a new series of nuclear tests early in 1955, is being given by Atomic Energy Commission to public officials, stockmen, miners, and others in southwestern Utah and southern Nevada, near the Nevada Proving Grounds.

●

Nuclear exhibit at Berlin attracts crowds. The most popular exhibit at Berlin's industrial fair is one showing all known uses of atomic energy. Crowds jam the United States Marshall House to see a remotely controlled robot handle fissionable materials behind a lead screen.

●

AEC closes Cleveland office. Closing the Atomic Energy Commission's Area Office at Cleveland, Ohio, was made possible by transferring supervision of the Hooker Electrochemical Co. contract to Niagara Falls, and Brush Beryllium Co. contract to Chicago Operations Office. The AEC facility at Harshaw Chemical is in standby status.

●

South African scientists study nuclear power. A group of government scientists are going to Britain for updating on industrial use of atomic energy.

●

Michigan U. starts broad industrial program. Mutual interest of industry and University of Michigan College of Engineering will be served by a new industrial program. For $5,000 a year a company will be kept posted on college research, which will be supported in part by the subscription fee.

●

NSF offers graduate fellowships. About 800 grants for a year for graduate scientific study during 1955–56 will be made under the National Science Foundation's Fourth Annual Graduate Fellowship Program. Closing dates are December 20 for postdoctoral applicants, January 3, 1955, for graduate students. Applications are available from the Fellowship Office, National Research Council, Washington 25, D. C.

●

Britain will process Belgian ore for Switzerland. The ten tons of uranium ore Britain is supplying for Switzerland under a recent agreement (NU, Oct '54, p. 76) will be processed in Great Britain. Ore will be mined by Union Miniere du Haut Katanga, a Belgian mining company in the southeastern section of the Belgian Congo.

●

Mercury production soars in Italy. In first quarter of 1954 Italy produced 56,902 metric tons of mercury ore, an increase of 27% over 1953 first-quarter total. Production and export of metal also increased, the latter by 200%. United States share of these exports has risen from 26% in 1953 to 53% in 1954.

●

Pratt & Whitney plans $30-million reactor facility. The Air Force will spend $30-million on an aircraft reactor research and development facility near East Hartford, Conn., for Pratt & Whitney Aircraft Division of United Aircraft Corp. Sum of $5.75-million (NU, June '54, p. 84) is being spent for land and start of construction.

society is being formed now, when the new Atomic Energy Act is encouraging dissemination of information "to promote scientific and industrial progress and public understanding."

Membership in the society will include persons trained in physics, chemistry, mathematics, biology, medicine and all branches of engineering, who are engaged in professional activity in one or more of the fields of nuclear science and engineering. Membership will not be limited to U. S. citizens.

Members of the society's organizing committee are: C. K. Beck, J. G. Beckerley, R. A. Bowman, W. M. Breazeale, K. Cohen, R. Doan, G. Failla, W. Friend, L. A. Hyland, K. H. Kingdon, W. E. Kingston, J. W. Landis, J. A. Lane, T. LeClair, U. Liddel.

Also D. H. Loughridge, J. D. Luntz, C. R. McCullough, J. R. Menke, R. P. Petersen, W. G. Pollard, S. B. Roboff, R. T. Sawyer, M. A. Schultz, W. E. Shoupp, P. Sporn, C. Starr, E. B. Stason, and A. M. Weinberg.

Details on membership can be obtained from the acting secretary, W. M. Breazeale, 211-A Main Engineering Bldg., Pennsylvania State U., State College, Pa.

Pennsylvania Power Gets AEC Approval for Study

The fifteenth nuclear power study has been approved by the Atomic Energy Commission under its industrial participation program. Pennsylvania Power and Light Company is embarking on a one-year company-financed study of the economic and engineering feasibility of a large-scale nuclear-fueled power plant for its system.

Cleared PP&L personnel will have access to AEC installations. Study results will be reported to AEC with a recommendation as to the feasibility of a PP&L nuclear-fueled power plant.

PP&L made an unsuccessful offer to the government to take part in building a pressurized water reactor, the contract for which was let to Duquesne Power & Light Co. of Pittsburgh.

EJC Forms Committee in Nuclear Field

Engineers Joint Council, which consists of eight engineering societies, has formed the General Committee on Nuclear Engineering and Science. The primary purpose of the group will be to sponsor an annual meeting in the nuclear field. (*Continued on p. 122*)

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The American Chemical Society has joined with EJC in this activity.

Chairman of the group is John R. Dunning, dean of the Columbia University School of Engineering; secretary and program chairman is Donald L. Katz of the University of Michigan.

The group is planning a nuclear congress for next July 11–16, will cancel this meeting if the United Nations selects a North American city for an international conference next year.

Besides Dunning and Katz, members of the EJC committee include: Alex D. Bailey, Manson Benedict, R. J. Faust, J. M. Garrelts, A. B. Kinzel, D. C. Macmillan, P. N. Powers, J. C. Warner, and J. T. Tebo.

MIT Starts $6-million Nuclear Science Project

Massachusetts Institute of Technology plans to build a $3-million laboratory for fundamental research in nuclear science and electronics. In addition, a $3-million fund will be provided for unrestricted support of MIT's work in these fields.

MIT's proposed nuclear reactor will be associated with the laboratory. The new building will be known as the Karl Taylor Compton Laboratories. Currently, MIT's Laboratory for Nuclear Science has a staff of 160 and an annual budget of about $1-million for research and teaching.

Argonne Contracts for EBWR Components, Design

Sargent & Lundby, Chicago, Ill., has been selected as architect-engineer for design of Argonne National Laboratory's experimental boiling water reactor (EBWR). Allis-Chalmers Manufacturing Co., Milwaukee, Wis., has been chosen to design, develop, construct, and install the power-generation, heat-transfer, and special equipment for the power cycle.

EBWR, part of the Atomic Energy Commission's five-year program for developing competitive nuclear power (NU, May '54, p. 72), will be built at ANL's DuPage county, Ill., site. It will produce 20,000 kw of heat, 5,000 kw of electricity. It will use slightly enriched fuel, will be moderated and cooled by ordinary water.

An important part of Allis-Chalmers' contract calls for development of special sealing devices for power-system components. The aim is to minimize

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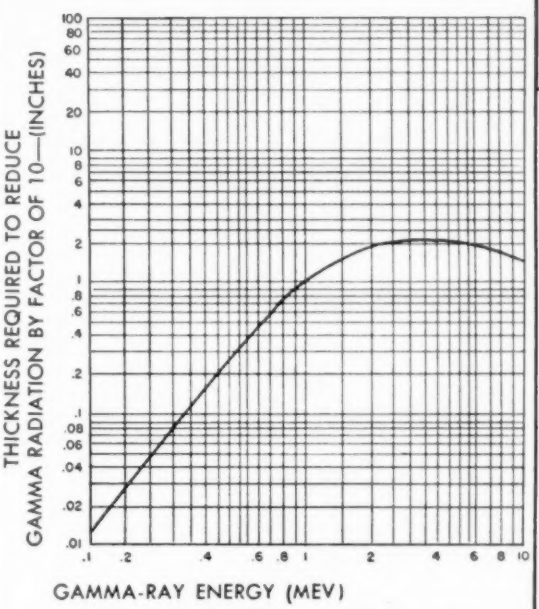

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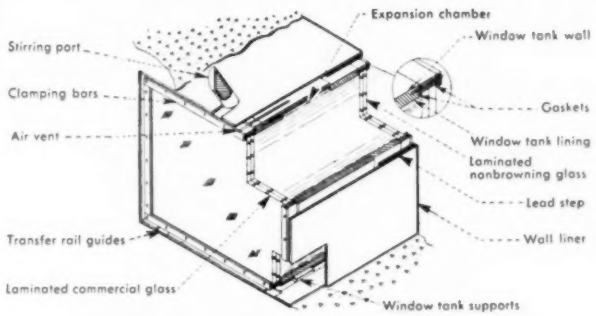

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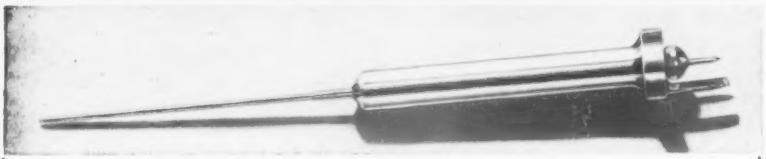

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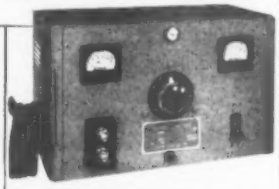

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leakage so that heavy water could be used as the coolant, with possible reductions in power costs.

Argonne will coordinate work for AEC and will design and construct the reactor core and control mechanisms. Construction will start next year; completion is scheduled for 1956.

AEC Asks Bids for MTR Irradiation Facility

Plans and specifications of a gamma irradiation facility building at the National Reactor Testing Station are available for contractors wanting to bid on its construction. Fuel elements from the Materials Testing Reactor will be used in the building to provide a gamma-ray field of 10,000,000 r/hr, more intense than any known source.

The 62 by 38-ft building will house a 40-ft long, 17-ft deep canal. Expected cost is about $60,000.

Plans are available from the Idaho Operations Office, U. S. Atomic Energy Commission, Idaho Falls, Idaho.

Private Companies Join French Atomic Operation

The French government has made its first move towards sharing atomic energy development with private industries. A new company, Companie Francaise de l'Eau Lourde, has been formed to produce heavy water. Ownership is split between L'Air Liquide and the nationalized Office National Industriel de l'Azote.

The new company will build a pilot plant at Toulouse where it will use a low-temperature technique for distillation of heavy hydrogen from ordinary hydrogen. Heavy-water production will be carried out under a contract with the French commission for atomic energy. The company is capitalized at $285-thousand.

One effect of the new joint industry-government venture was to send L'Air Liquide stock soaring from $276 to $308 per share.

Forum Elects Officials; Membership Rises to 171

Addition of 30 new organizations during September raised Atomic Industrial Forum membership to 171. Continued expansion of the organization is reflected in election of two new board members and a new vice president, and in plans for meetings in 1955.

At the annual meeting in New York

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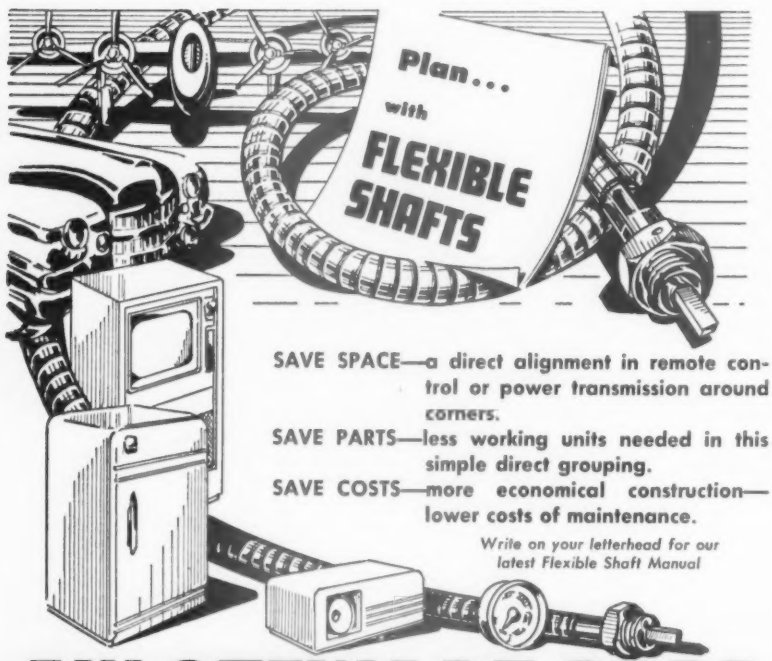

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CIRCLE LESS

City, J. L. Atwood, president of North American Aviation Inc., and Broderick Haskell, vice chairman of Combustion Engineering, Inc., were elected for three-year terms on the board of directors. Six board members whose terms had expired were re-elected. Total number of directors is now 21.

The Forum's new vice president is Admiral Earle W. Mills, president of Foster Wheeler Corp. All other officers were re-elected.

Tentative plans have been made for Forum meetings on "mining and processing of uranium and other fissionable materials" and "international industrial cooperation in atomic energy" next year. Receiving active consideration for integration into the 1955 program are the problem areas of industrial nuclear development: AEC's licensing and patent practices, reactor health and safety problems; liability and compensation insurance, fissionable material economy, and dissemination of nonweapons information.

Argonne Offers CP-5, EBR Irradiation Facilities

Supplementing isotopes production activities at Oak Ridge, Argonne National Laboratory is opening irradiation facilities of its research reactor, CP-5, and 60-in. cyclotron to educational, research, industrial and commercial organizations. In addition, facilities for fast-neutron irradiation in the Experimental Breeder Reactor have been made available. EBR neutron flux is 10^{14} n/cm^2/sec (NU, Sept. '52, p. 8).

Use of all three facilities is subject to the licensing procedure of the Atomic Energy Commission. Further information is provided in a booklet "Irradiation Services," which is available from the Argonne National Laboratory, P. O. Box 299, Lemont, Illinois.

Odlum Submits Power Plan to Argentine Government

Argentine's Economic Council is considering a proposed 15-year contract under which a group headed by American industrialist Floyd Odlum would search for uranium, mine it, and build a power reactor near Buenos Aires.

Under the proposal, Odlum would undertake a 3-year nationwide uranium survey followed by a 12-year uranium mining program. Odlum's group would act as government agents, with no territorial rights involved. Argentine's National Atomic Energy Board

would be the sole buyer of uranium produced. Odlum would receive 75% of current international prices as dollar payment, with the remaining 25% going towards local taxes.

The agreement calls for construction of an atomic energy plant within ten years. Erection costs would be met by the local taxes deducted from the uranium deliveries. Electric capacity of the proposed plant is estimated as 20,000–25,000 kw.

Fission-Product Plant To Be Built at ORNL

Equipment for separating and purifying fission products in large quantities will be provided by a $1.5-million facility to be built at Oak Ridge National Laboratory. To be completed in less than two years, the plant also will serve as a pilot plant for future industrial models. Construction will be done under an Atomic Energy Commission contract awarded on the basis of competitive lump-sum bids.

The new plant will be able to separate 200,000 curies per year of cesium-137, thousands of curies a year of strontium-90, and other less abundant fission products. Up to now, AEC has used smaller-scale facilities to produce a total of only 5,000 curies of Ce^{137}, and only a few curies per month of Sr^{90}. Both isotopes have important industrial and medical uses.

A mill-type building 112 by 60 ft will house 16 cells with concrete shielding walls 4 ft thick. Viewing windows and manipulators will be provided in five of the cells.

ORNL is operated for AEC by Carbide and Carbon Chemicals Co., a division of Union Carbide and Carbon Corp.

Industry Sees Big Market for Reactors, Power Units

Rapid development of the nuclear industry was forecast by seven of its representatives at the Atomic Industrial Forum meeting in September (NU, Oct. '54, p. 9).

American Machine & Foundry last year foresaw a market for small package reactors looming about 1956, started working on equipment and mechanisms for large power reactors on basis of predicted "growing demand" about 1958. Now, says AMF, "developments are coming more rapidly than we expected . . . [we must] shorten our schedules." And AMF is

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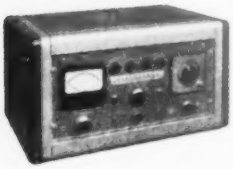

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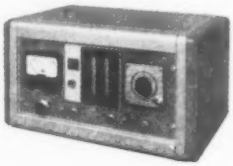

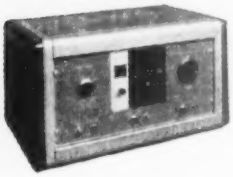

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All replies will be held in strict confidence.

P4426 NUCLEONICS
330 W. 42nd St., New York 36, N. Y.

toying with the idea of building its own industrial research reactor.

Babcock & Wilcox expects to quote firm prices for three types of reactor power plants next year. It's figuring on four or five industry-government research projects starting within two years, plus 20 research or package reactors in U. S. and an equal number abroad within 30 months.

Vitro Corp. of American expects economic nuclear power "probably by 1964, perhaps sooner." Vitro is digging into reactor reprocessing with its own funds; it is also studying fuel-element and fabrication and fission-product use. Ultimate aim is to offer "off-the-shelf" designs for complete installations.

Sylvania Electric has put $3–4-million into its nuclear business; more funds are on call. It sees better reactor materials as the biggest need, is aiming its program at developing fuels, fuel elements, fabrication methods, components, and cheaper and more efficient separation and recovery of spent fuels.

Westinghouse, off to an early start on nuclear power, still sees a long-term research and development burden to be shared by government and industry before profits are forthcoming. But Westinghouse has committed $1–9-million of its capital to nuclear energy already.

Nuclear Development Associates wants industry to throw its weight behind reactor power plants as an item of foreign trade and prestige.

Victoreen thinks the instrument industry can aid power economics with automatic reactor control that will decrease operators' need for technical knowledge.

AEC Awards 20 More Research Contracts

Adding to the 90 contracts announced recently (NU, Sept. '54, p. 84) the Atomic Energy Commission has awarded 20 more contracts for unclassified physical research. Included are 17 renewals, the largest being for $669,040 with the University of Rochester for nuclear physics research.

The three new contracts are with University of Delaware for studies of thermal diffusion in liquids, Rutgers University for studies of radiation damage of metals and alloys, and University of Washington for preparation of compounds containing O-F or N-F bonds.

AEC, Navy Reinstate Project for Nuclear Carrier

A nuclear-powered aircraft carrier is back as a joint Atomic Energy Commission, Department of Defense project. It had been knocked out during fiscal-1953 budget cuts. Westinghouse Electric Corp., original contractor for the project, has received a new contract, with $1.25-million allotted for the current fiscal year.

In further expansion of naval use of nuclear power, Admiral Robert B. Carney revealed recently that Mare Island Shipyard, California, will become a production center for atomic submarines. Teams of Mare Island personnel are visiting present production facilities for indoctrination.

Former Liason Head Joins Investment Group

Robert Lebaron who resigned Aug. 1 as assistant to the Secretary of Defense for atomic energy and chairman of the military liason committee to the Atomic Energy Commission, has joined a group of investors interested in peacetime atomic energy ventures. He will study investment possibilities.

Backing comes from Vincent Astor, Marvin Braverman, Robert W. Dowling, Gardner Cowles, Harvey S. Firestone, Jr., Eric Johnston, Roger M. Kyes, Laurence Rockefeller, T. Mellon and Sons, Charles P. McCormick, Harris McIntosh, G. H. Walker, and the Brady Estate.

AEC, REA Cooperate Under Preference Clause

With the new Atomic Energy Law of 1954 containing a section giving preference in licensing of nuclear power plants and power production to cooperatives, Rural Electrification Administration administrator Ancher Nelsen and Atomic Energy Commission chairman Lewis Strauss have announced that their units will cooperate in carrying out this provision.

Strauss said that AEC wanted REA to benefit from the program as soon as costs make this practical. Nelsen agreed, saying in a recent speech that cooperatives shouldn't invest until lower costs are actually achieved.

The National Rural Electric Cooperative Association has already applied to AEC for a power study group agreement.

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- Rugged light-weight construction, total weight only 4½ lbs.
- Chamber separable from meter on 20 foot cable spool mounted inside model AGB-10K-SR for remote monitoring.
- Only one control for selecting radiation range and for checking plate, filament and shell batteries individually

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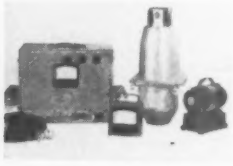
PRODUCTS AND MATERIALS



G-M and Scintillation Counters

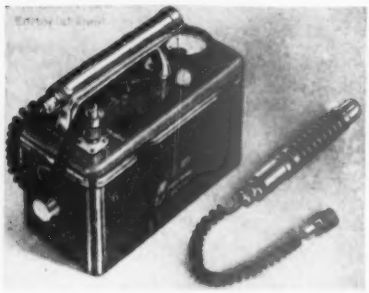
Three new counters, tailored for prospecting work, are available.

Available with Bi-coated or standard tubes, the Nucliometer (left) has large cluster of 24 tubes. It is provided with panel-mounting meter, 2–16-sec time constant selection. *The Radiac Co. Inc., 489 5th Ave., New York, N. Y.* (P-1)

Low priced U-238B (center) weighs 3¾ lb, powered by 2-45 v and 2 flashlight cells, has voltage regulator tube. Detector has 2-tube printed circuit. *Goldak Co., 1544 W. Glenoaks Blvd., Glendale, Cal.* (P-2)

Model SC-10 (right) has 8-in. Plastifluor crystal, 5-in. photomultiplier tube, ratemeter (1,000–40,000 cps), time constants 0.1, 1.0, 10.0 sec, and external meter. Units have ruggedized tubes; are shockmounted. Designed for attaching 1-ma chart recorder. *Sherwin Instrument Co., 2875 Broadway, New York, N. Y.* (P-3)

RADIATION DETECTORS AND ACCESSORIES

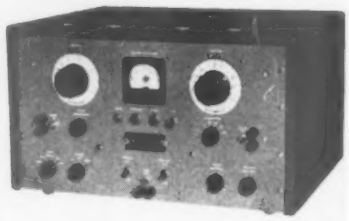


Interchangeable Survey G-M

Choice of tube (0.2-Mev β,γ or mica end-window tubes) makes model 2612 portable survey meter (above) useful for general survey work. It has scales of 0.2, 2 or 20 mr/hr. Source for checking calibration is case-mounted. *Nuclear Instrument and Chemical Corp., 229 W. Erie St., Chicago, Ill.* (P-4)

Well-Counting Assembly

Model LAX14P scintillation well counter, mounted in Model 14L-3 shield, provides 2-in. lead shielding to reduce background to about 2 cps. Split lid facilitates sample changing. NaI(Tl) crystal, 1¾-in. diameter, 2-in. thick, counts samples in ⅝-in. diameter, 1.5-in. deep well. Activity as low as 10^{-5} μc/ml is claimed countable. *R-C Scientific Instrument Co., Inc., 307 Culver Blvd., Playa del Rey, Cal.* (P-5)



Pulse Generator

Model PG-220A can be operated self-synchronous or from an external trigger. In either case it furnishes a trigger output for synchronizing auxiliary equipment. Pulse width and its position with respect to the sync output are both variable from 0.05 to 50 μsec, extendable to 1,000 μsec with an auxiliary unit. Rise and fall times less than 0.03 μsec. Repetition rate from 1 to 20,000 pps; output is 100 v at 50 ohms, variable continuously with 50-db attenuator. *Telectronics Laboratory, Inc., 54 Kinkel St., Westbury, L. I., N. Y. (above)* (P-6)

Double Pulse Generator

Model 2140A produces two pulses a variable time apart, all of whose parameters can be separately varied. Rise times are 0.02 μsec, amplitude variable to 50 v, impedance is 50 ohms. Widths of both pulses are direct reading and variable from 0.1 to 1,000 μsec; rep rate is 10–100,000 pps. One pulse is 1 μsec from internal sync output, the other at delay variable from 0 to 10,000 μsec. *Electro-Pulse, Inc., 11811 Major St., Culver City, Cal.* (P-7)

Three Electronic Counters

These ruggedized instruments can determine frequency by counting the number of cycles for a length of time fixed by a crystal-controlled oscillator.

Model 3149 measures frequency up to 150 kc; binary or decimal readout is available, also a high-speed printer. Model 471 is an 8-Mc counter chronograph. Measures up to 1 sec with an accuracy of ⅛ μsec. *Potter Instrument Co., Inc., 115 Cutter Mill Rd., Great Neck, N. Y.* (P-8)

Designed for military field use, model 111 electronic counter offers all-digital frequency division from a 100 kc crystal standard. It will count up to 99,999 at any rate up to 100,000 cps. Counting interval is 1 or 10 sec with an adjustable display time. *Electronic Engineering Co. of California, 180 S. Alvarado St., Los Angeles, Cal.* (P-9)

Plug-Ins

Pulse generators, binary scalers, delay multivibrators, voltage amplifiers, cathode followers and many other circuit "blocks" are available in plug-in form on 11-prong bases so that all important tube elements and circuit points are available. Requires standard power supplies, generally unregulated. *Walkirt Co., 145 W. Hazel St., Inglewood, Cal.* (P-10)

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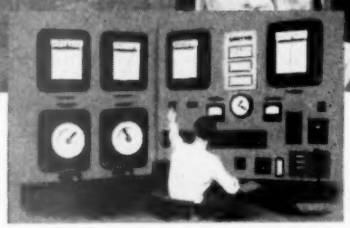
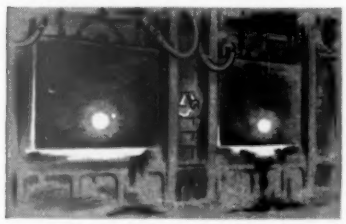
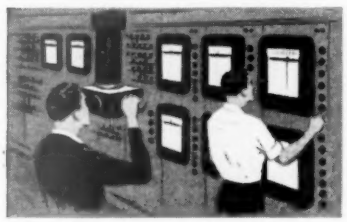
Speedomax recorders in rocket lab, Bell Aircraft Corp. They record pressures, flow, thrust, temperatures and turbine speeds.



Atomic-energy plant operator using Speedomax Recorders



Rayotube® staring at furnace roof reports temp. to Speedomax Controller



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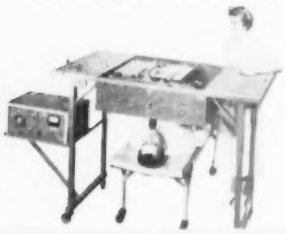

Model CAX47P

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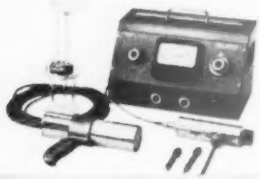
Model FAX10

Probitron. Probing α, β and γ detectors for therapy control (intracavity dosage, isodose plotting, etc.). Accessories for thyroid uptake.



Model LAX14P

Scintimeter (4π). Scintillation well counter in 2" Pb shield. New swivelling lid for easy access to counting well.

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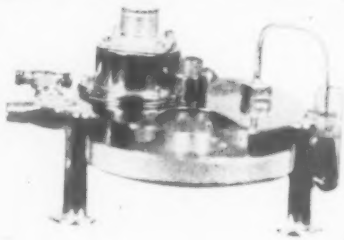

Gas-Flow Counters

Two gas-flow counters, models D47 (top) and DD7 and DD8 (bottom), are available for low-energy measurements.

Model D47, essentially a G-M counter, permits positioning sample as part of counter wall or with 120-μg/cm^2 window interposed. With sample changer, it counts up to 50 samples automatically. *Nuclear Instrument and Chemical Corp., 229 W. Erie St., Chicago 10, Ill.* (P-10A)

Models DD7 and DD8 preflush flow counters have three chambers for counting, preflushing, and changing samples. They accept sample pans up to 1- and 2-in. dia., respectively, and can be used in Geiger or proportional regions. *Detectolab, Inc., 6544 Sheridan Rd., Chicago, Ill.* (P-11)

Eye-Probe Counter

Stainless-steel probing needle of new counter is 2-mm in diameter; graduated in 1-cm divisions. Its sensitive area extends 5-mm back from probe tip. Background is claimed negligible. Starting voltage of counter is 1,000 v $\pm$ 5%. Its plateau length is 75–100 v; slope is within 10%/100 v. *H. W. Leighton Laboratories, 26 Herman St., Glen Ridge, N. J.* (P-12)

Beta-Gamma Survey Meter

Model DG-700 β-γ discriminating survey meter, designed to FCDA specifications, employs G-M tube, counting-rate circuit, and meter and earphone indication. Ranges are 0–50, 0–5.0, and 0–0.5 mr/hr; it is sensitive to β-rays above 175 kev; Sr^{90} calibrating source is provided. *Atomic Center for Instruments and Equipment, Inc., 489 Fifth Ave., New York 17, N. Y.* (P-13)

DETECTORS IN BRIEF

Industrial X-ray unit. Self-contained, portable radiography unit MG 60 features 1-mm focal spot, takes 2 amp, 110 or 220 v a-c current. Continuous output is 4 ma at 60 kvp. *North American Philips Co., Inc., 750 Fulton Ave., Mount Vernon, N. Y.* (P-14)

Leak detector. New ultrasensitive type 24-110 leak detector is designed to sense 0.5 ppm of He in air. A simplified mass spectrometer, the new unit is ten times as sensitive as the standard 24-101A detector. *Consolidated Engineering Corp., 300 N. Sierra Madre Villa, Pasadena 8, Calif.* (P-15)

Phosphors. Line of crystalline, plastic and liquid phosphors is offered. Perspex-mounted crystals up to 2.5-in. diameter, down to 1-mm. thick; plastic phosphors up to 9-in. diameter on special order; materials for liquid phosphors are available. *Nash and Thompson Ltd., Oakcroft Rd., Tolworth, Surrey, England.* (P-16)

Proportional counter converter. Model PCC-14 converts scalers with 600–2,000 v range to proportional counter. Will detect β in presence of α and vice versa. Input sensitivity is set at 0.001 v; is adjustable from 0.0005–0.0025 v. Counting gas must be supplied. *Nuclear Measurements Corp., 2460 N. Arlington Ave., Indianapolis 18, Ind.* (P-17

Scaler. RCL Mark 13 Model 4096 is designed for use with large output signal equipment such as differential pulse-height selectors. Scaler is Higginbotham type, with pentode Schmidt trigger discriminator input. Resolution is about 1-μsec. Scale is 4-factor, to 4,096. *Radiation Counter Laboratories, Inc., 5122 W. Grove St., Skokie, Ill.* (P-18)

Decimal scaler. Model 2020 features nonoverloading input amplifiers (0.2 v or 1-mv input sensitivity), 10-turn discriminator control 5–50 v, preset time and count, single switch reset of register, timer and scaling circuits. *Berkeley Division, Beckman Instru-*

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ments, Inc., 2200 Wright Ave., Richmond, Cal. (P-19)

Dosimeter kit. Model L-21K is a dosimeter charger with clips to hold several quartz-fiber direct-reading dosimeters. Flashlight cell powers charger. *Landsverk Electrometer Co., 550 W. Garfield Ave., Glendale 4, Cal.* (P-20)

High voltage supply. Model 312 designed for scintillation counting is stable to 0.02% per day. Output range 200–1,400 v, in 17 steps. Positive or negative output through same connector is possible. Maximum output rating is 1 ma; line regulation is 0.01% for 100 to 130 v change. *Atomic Instrument Co., 84 Massachusetts Ave., Cambridge, Mass.* (P-21)

High current, high voltage supply. Output of 25–60 ma, 2,950–3,750 v is claimed for Model 306 d-c supply. Regulation is 0.5%, with 50 mv ripple on 60- or 400- cycle single-phase power. *Allied Engineering Division, South Norwalk, Conn.* (P-22)

High voltage connectors. Series 800 connectors have 15 contacts, including 3 high voltage center contacts removable for easier wiring. Series FHL offers five high voltage contacts plus ground. *DeJur-Amsco Corp., 45–01 Northern Blvd., Long Island City 1, New York.* (P-23)

Dual timer. Model AT-1 dual timer can be used for predetermined or elapsed time operation. Range is 2 sec to 60 min; unit is powered from scaling unit. *The Atomic Center, 489 5th Ave., New York 17, N. Y.* (P-24)

High speed flip-flop. Flip-flop for counting has 0–1 Mc range for decade operation. Minimum input signal is 80 v for input frequencies from 0–500 kc. Output signal has 80 v amplitude; unit is packaged as 11-pin-base plug-in. *Ecco Production Co., 827 S. Vermont Ave., Los Angeles 5, Cal.* (P-25)

Plotting board. Electroplotter G accepts input from punched cards, punched tape, and keyboard. Unit plots on 30 × 30-in. surface, with accuracy of one part in 1,500, or 0.02-in. *Benson-Lehner Corp., 2340 Sawtelle Blvd., West Los Angeles, Cal.* (P-26)

Telemetering counters. PC-500 series potentiometer and CC-500 series contacting counters totalize and indicate shaft rotation in either direction in $\frac{1}{10}$-revolution increments. *Photo-*

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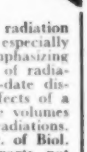

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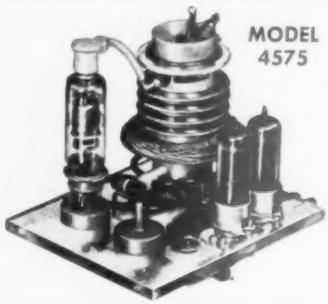

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con Research Products, 421 N. Foothill Blvd., Pasadena 8, Calif. (P-27)

Diffraction accessories. Krypton-filled proportional counter and preamplifier together have 5× linear range of argon-filled multichamber G-M tube; resolution is <1 μsec; tube life is increased over G-M tube. *General Electric Co., 4855 Electric Ave., Milwaukee 1, Wis.* (P-28)

RADIOACTIVITY MATERIALS AND APPARATUS

Radioactive Silicones

Randomly C^{14}-labeled silicone fluid that corresponds to General Electric's SF-96 is now available in 0.6-mc/gm supplies. It is a water-white oil with a viscosity of 300 centistokes at 100° F. Low-molecular-weight fragments have been removed, and the product's vapor pressure is less than 1 mm Hg at 250° C. *Abbott Laboratories, North Chicago, Ill.* (P-29)

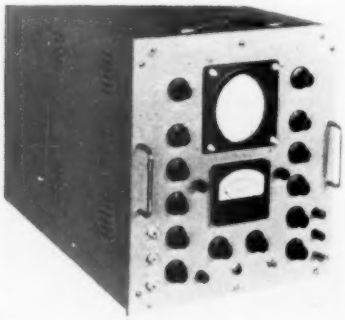
Cobalt-60 Therapy Unit

Cobaltron II therapy unit, for sources up to 2,000 curies, provides 30–100 cm source-skin distance. Clip-in applicators give various field sizes and shapes. Mounting permits static-beam or moving-field therapy. With 2,000 curies of Co^{60}, lead shielding reduces intensity to 7.5 mr/hr 5 cm. Equipment consists of: source head, trunnions, overhead carriage gear, remote-control panel, and accessories (applicators, etc.). *Pantatron Ltd., 26 Savage Gardens, London E.C. 3, England.* (P-30)

Labeled carbohydrates. *D*-glucose-1-C^{14}, *D*-glucono-*delta*-lactone-1-C^{14}, and *D*-mannose-1-C^{14} are available from 1 to 0.05 mc under AEC licensing procedures. *Nuclear Instrument and Chemical Corp., 229 W. Erie St., Chicago 10, Ill.* (P-31)

Radiographic intensifying screen. At 80 kv peak, Lightning Special screen is claimed twice as fast as Par Speed screen. *E. I. Du Pont DeNemours and Co., Wilmington 98, Del.* (P-32)

Portable uranium analysis unit. Model UA-10 includes optical color comparator, burner and fuel supply, nickel crucible, glassware, tongs, balance, chemicals, and instructions. *Sherwin Instrument Co., 2875 Broadway, New York, N. Y.* (P-33)



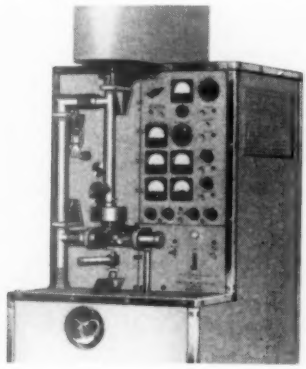
Oscilloscopes

Four oscilloscopes were recently announced.

Model C-04 Synchroscope (above) is a redesign of MIT Rad Lab's P-5. It has 0.05-μsec/in. sweep, 600-mc vertical bandwidth, 250-v output trigger, meter for direct calibration, and provision for external triggering. *TLG Electric Corp., 31 W. 27 St., New York 1, N. Y.* (P-34)

Type 327 has a frequency range from d-c to 5 Mc. Precisely calibrated sweeps take from 1 sec to 1 μsec to transit 4-in. scale. Employs 5AMP monoaccelerator tube for optimum accuracy. *Allen B. Du Mont Laboratories, Inc., Clifton, N. J.* (P-35)

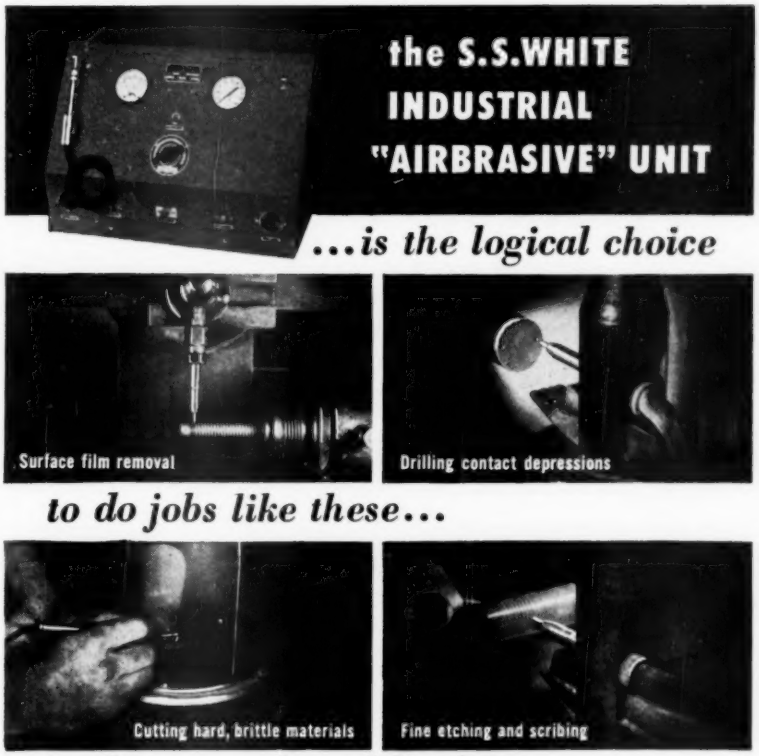
Large-screen oscilloscopes offer 17- or 21-in. display. Linearity is ±1%, sensitivity is 1 mv/in., sweep speed is 10^{-6}–1 sec/in., frequency response is from d-c to 20 kc for full deflection. *Electromec, Inc., 3200 N. San Fernando Blvd., Burbank, Cal.* (P-36)



Oscillographs

Five new oscillographs include one useful for 10^{-10}-sec pulses.

The Model 2 high-speed microoscillograph (above) employs travelling-wave deflection and 0.01-mm electron



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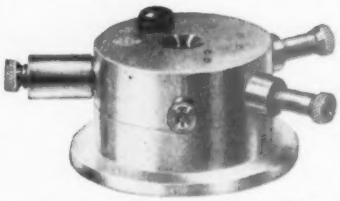

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beam to give 0.2-v-per-trace-width sensitivity at frequencies up to 10,000 Mc. *Central Research Labs., Inc., Red Wing, Minn.* (P-37)

CR-I recording oscillograph has 8 dual-gun tubes and records up to 16 channels and to 250 kc. *William Miller Instruments, Inc., 325 N. Halstead Ave., Pasadena 8, Cal.* (P-38)

Type M oscillograph has 150-μv/cm sensitivity, $\frac{1}{120}$-sec pen response, and 1% linearity. *Offner Electronics Inc., 5320 N. Kedzie Ave., Chicago 10, Ill.* (P-39)

Oscillographs with 0.03–114-in./sec recording speed offer instantaneous change of speed by factors of 2 over a range of 8:1; 708C records 36 channels; 712C records 60 channels. Model 401-6 portable oscillograph has been improved by addition of rectifier unit for line-voltage operation. *Heiland Research Corp., 130 E. Fifth Ave., Denver, Colorado.* (P-40)

F6C console recorder has 0–80-cycle response, chart speeds to 25 mm/sec; it is available with pen or electric recording. *Photron Instrument Co., 6530 Detroit Ave., Cleveland 2, Ohio.* (P-41)

Marker Generators

Three new sweep calibrators are available.

Type 181 time-mark generator (above) provides 3-v crystal-controlled time marks every 1, 10, 100, 1,000, or 10,000 μsec as well as a 10-Mc sine wave. *Tektronix, Inc., P. O. Box 831, Portland 7, Oregon.* (P-42)

Model 238-1A sweep calibrator produces 0.1- or 1-μsec pulses at rates from 100 cycles to 1 Mc by decades. Crystal control gives 0.01% accuracy. *Loral Electronics Corp., 794 E. 140 St., New York 54, N. Y.* (P-43)

Type 300 time calibrator offers crystal-controlled 10-Mc sine wave or pulses at 1-μsec–10-msec intervals vari-

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able in decade steps. Either +3-v or −30-v pulses are available. Also operates on external sync. *Allen B. Du Mont Laboratories, Inc., Clifton, N. J.* (P-44)

Electronic Switches

Here are three products that can convert your oscilloscope for multiple-trace displays.

Model 1912-channel electronic switch gates 12 d-c amplifiers sequentially for 25 μsec at 2.3-kc rate. Highest frequency that can be displayed is limited only by sampling rate. *Century Geophysical Corp., 1333 N. Utica, Tulsa, Oklahoma.* (P-45)

Model E-196 has 10–2,000-cycle/sec switching rate, 2 channels, d-c coupled amplifiers with 25-kc bandwidth and gain of 10, and a square-wave output. *Chatham Electronics Corp., 630 Mt. Pleasant Ave., Livingston, N. J.* (P-46)

Ten-channel multiplexer uses beam-switching tube to gate each 1-Mc-bandwidth a-c amplifier at rates up to 200 kc. *Burroughs Corporation, Electronic Instruments Division, 1209 Vine St., Philadelphia 7, Pa.* (P-47)

OSCILLOSCOPES IN BRIEF

Multigun tube. Six electron guns provide as many simultaneous traces on 7-in.-diameter face. *Electronic Tube Corp., 1200 E. Mermaid Lane, Philadelphia 18, Pa.* (P-48)

Probes. Type 2607 has flat response from d-c to 10 Mc, 20:1 attenuation. Type 2608 is cathode-follower type, flat from 5 cycles to 14 Mc. Type 2609 detector test probe gives response flat within 1 db over any 6-Mc band from 250 kc to 400 Mc. *Allen B. Du Mont Laboratories, Inc., Clifton, N. J.* (P-49)

Reader. Oscar F is data-reducing device that reads oscillograph records, performs mathematical operations as desired, and provides digitized output for computers. *Benson-Lehner Corp., 2340 Sawtelle Blvd., Los Angeles 64, Cal.* (P-50)

Magazine. Paper supply for Model 580 oscillograph has 250-ft capacity, 10% speed accuracy. *Midwestern Geophysical Laboratory, 3401 S. Harvard Ave., Tulsa, Oklahoma.* (P-51)

Camera. Automatic film advance for 3–16 traces per Polaroid print is provided without image reversal, by Recordoscope 1185. *Aremac Associates, 329 W. Washington St., Pasadena 3, Cal.* (P-52)

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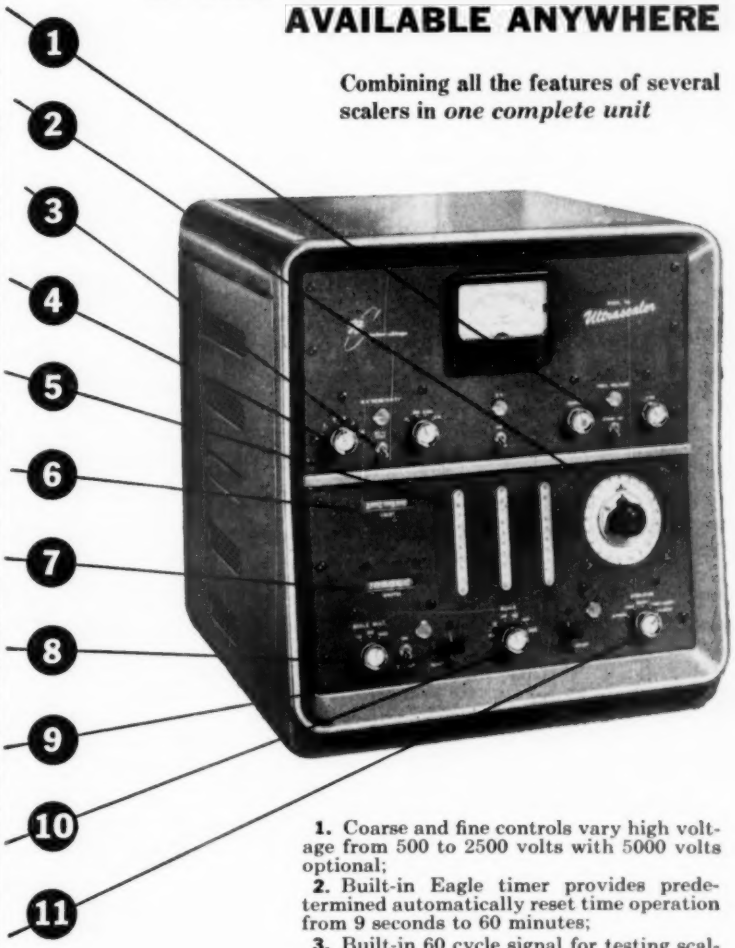

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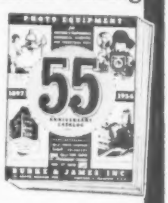

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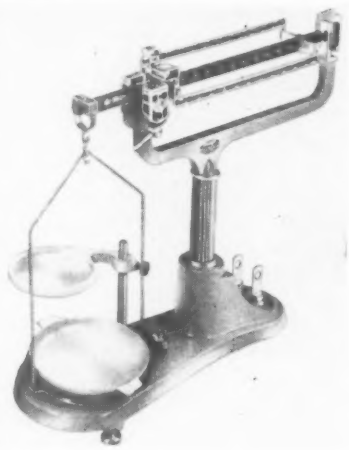
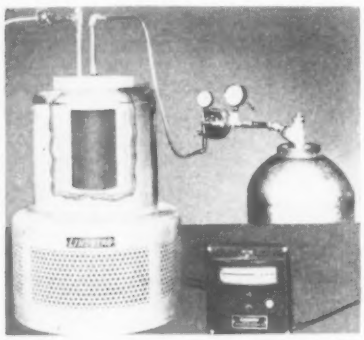


Triple-Beam Balance

Model C.G. 311 triple-beam balance has 0.01-gm sensitivity and 311-gm capacity; exposed parts, e.g., beams, pan bows and weighing pan, are stainless steel. *Ohaus Scale Corp., 1050 Commerce Ave., Union, N. J.* (P-53)

Hot Plate-Magnetic Stirrer

Combined hot plate-magnetic stirrer permits heating liquid while stirring it. Hot plate is plugged into base. Glass-enclosed stirring magnet is supplied. Stirring speed is rheostat controlled; heating is variable from 0 to 400 watts. *Arthur S. La Pine and Co., 6001 S. Knox Ave., Chicago 29, Ill.* (P-54)



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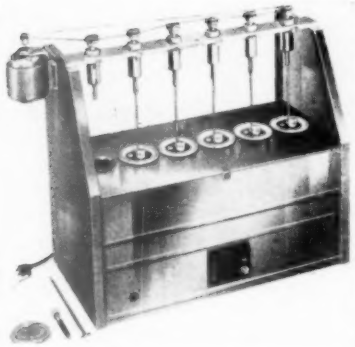

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Interference Microscope

This interference optical microscope permits measuring variations in surface smoothness or film-thickness, visually or photographically; sensitivity is order of 1 microinch. Upright section containing microscope, vertical illuminator and camera is positioned as a unit; stage is also adjustable. Illumination of fringes is adjustable. *Farrand Optical Co., Inc., Bronx Blvd. and E. 238th St., New York, N. Y.* (P-57)

Ultrasonic Generator

Sonogen model 2000 is rated at 2 kw. Generator can be coupled with barium titanate transducer (above) to produce 100 kc/sec vibrations. Surface area is 70–100 in². Alternately, several smaller transducers with same total area could be used. *Branson Ultrasonic Co., 430 Fairfield Ave., Stamford, Conn.* (P-58)

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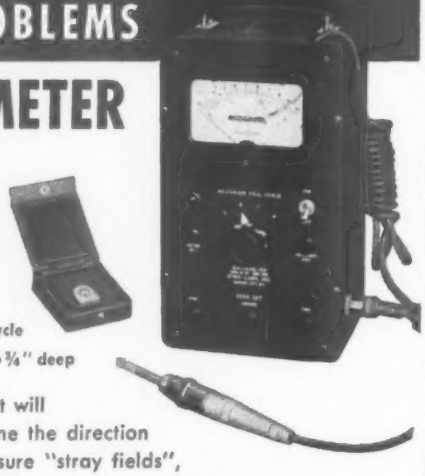

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20 gal/hr high-purity water. *Penfield Mfg. Co., Inc., 19 High School Ave., Meriden, Conn.* (P-61)

Microscope warm stages. Thermostat-controlled heating elements control slides at 80–110° F; models 57 and 58 take 3 × 1 in. slides and model 59, Maximow slides; model 58 also takes immersion lenses. *Chicago Surgical and Electrical Co., 217 N. Desplaines St., Chicago 6, Ill.* (P-62)

Jacketed conductivity cells. Dip-use cells are designed for specific temperature requirements. Pyrex tapered stopper is integral portion of cell; oversized test tube serves as jacket. Cell available in constants of 0.01–100. *Industrial Instruments, Inc., 89 Commerce Rd., Cedar Grove, N. J.* (P-63)

Black-reading mercury. Quiksite thermometers present jet-black thread against white background. *H-B Instrument Co., American and Bristol Sts., Philadelphia 40, Pa.* (P-64)

Test-cabinet controls. Program controllers maintain desired temperature, humidity, or altitude conditions; accuracy is ½% of full scale. Available with electric on-off or proportional-input control or with pneumatic control in proportional, reset, or derivative modes. *The Bristol Co., Waterbury 20, Conn.* (P-65)

Electronic relay. No. 9802 relay controls load currents up to 10 amperes by means of regulating circuit requiring as little as 3-μa current flow; device provides for simultaneous normally open and normally closed operation as well as auxiliary and motor-stirrer circuits. *Wilkens-Anderson Co., 4525 W. Division St., Chicago 51, Ill.* (P-66)

R-F shield. Galvanized-iron enclosure has insertion loss to electric field of at least 110 db from 14 kc to 1,000 Mc; loss to magnetic field is equal to that for electric fields above 1 Mc, 102 db at 150 kc, and 9 db at 60 cps. *Ace Eng. and Machine Co., 3644 N. Lawrence St., Philadelphia 40, Pa.* (P-67)

Conversion slide rule. Slide rule bears 64 linear, liquid, energy and miscellaneous factors on one side and complete trigonometry scale on the reverse. Conversion can be made with single setting. *Pickett and Eckel, Inc., 1109 S. Fremont St., Alhambra, Calif.* (P-68)

Bore gages. Gages check bores for size, taper, oval form and bell-mouth, reading in 0.0001 in.; 0.200–4 in. holes

can be measured. *George Scherr Co., Inc., 200 Lafayette St., New York 12, N. Y.* (P-69)

Miniature wire brushes. Stainless-steel, steel, brass, hog-bristle or Nylon twisted-in wire brushes, in 0.06–0.124 in. diameters, ±0.001 in. for electronic equipment. *Mill-Rose Co., 1985 E. 59th St., Cleveland 3, Ohio.* (P-70)

Ceramic tubing. Miniature alumina ceramic tubes, impervious, chemically inert, nonmagnetic, and heat-shock resistant, can be used at temperatures up to 2,000° F. *American Lava Corp., Chattanooga 5, Tenn.* (P-71)

Heating blanket. Type R electric blanket, for temperatures up to 650° C, is claimed to be made of break- and wear-resisting fabric. *Glas-Col Apparatus Co., Inc., 711 Hulman St., Terre Haute, Ind.* (P-72)

Ultraviolet lamp. Model 3X-4 permits noninjurious fluorescent inspection of materials. *Ultra-Violet Products, Inc., S. Pasadena, Calif.* (P-73)

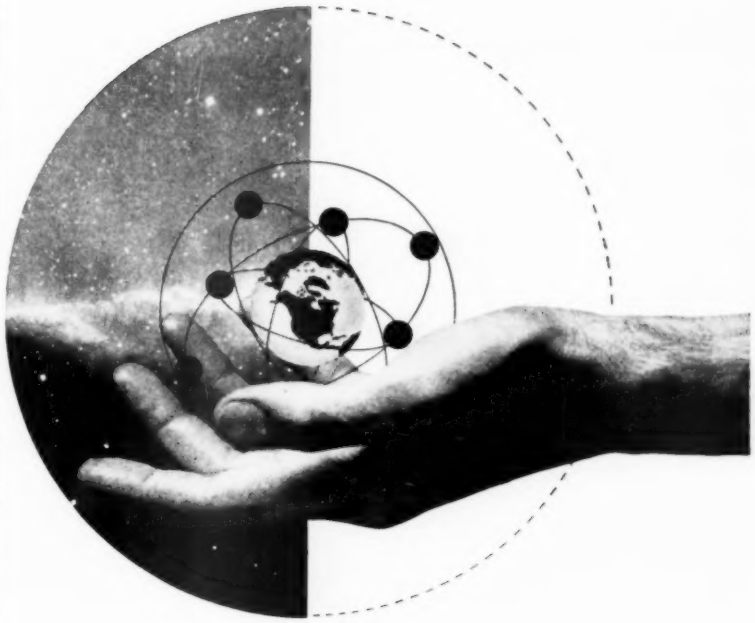
Lab marking tool. Ball-pointed Tech-Pen marks most surfaces; red, yellow, blue, green, orange, black, and white inks resist temperatures up to 500° C (red, 1,000° C), acids, alkalies, alcohol. *Palo Laboratory Supplies, Inc., 81 Reade St., New York 7, N. Y.* (P-74)

Deaerators. Uni-Pac delivers up to 60,000 lb/hr with oxygen content not exceeding 0.005 cm^3/liter; storage-tank capacities are 35–250 ft^3. *Cochrane Corp., 17th St. and Alleghany Ave., Philadelphia 32, Pa.* (P-75)

Centrifuge. Model 10 has built-in 6,000 rpm speed indicator, electric brake, 3-hour timer, ⅓-hp series motor, safety switch on cover and stepless speed control. *Chicago Surgical and Electrical Co., 217 N. Desplaines St., Chicago 6, Ill.* (P-76)

Ultrasonic generator. Model 400 is 400-watt generator continuously tunable from 10–1,200 kc/sec. Variety of transducers are available. *Rich-Roth Laboratories, 1240 Main St., Hartford, Conn.* (P-77)

Temperature baths. Sensitivity of 0.004° F is claimed for sensing element of No. 884 visibility bath. Features: 0–600 watt adjustable immersion heaters, 500 additional watts for rapid heat-up, continuously supplied if desired, 90% of working area available. Model 883 has either 500 or 700 watt heater, temperature regulator sensitive



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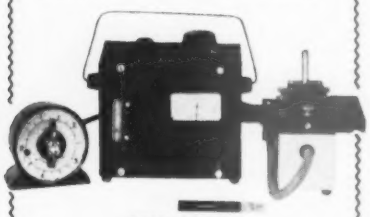

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to 0.01° C, no rapid heat-up. *Wilkens-Anderson Co., 4525 W. Division St., Chicago 51, Ill.* (P-78)

Concrete drill. Equipped with a diamond bit, machine cuts ¼–6-in.-dia. holes in reinforced concrete. *Molco Drilling Machines, Inc., 1100 20th St. N. W., Washington, D. C.* (P-79)

Air-line filter. Dual-duty unit is both air filter and receiver. Filter unit is 24-in.-long, 5-in.-diameter, Fiberglas-filled cylinder. Will withstand 600 psi. *Airlenco, Inc., 198 Wayne St., Mansfield, Ohio.* (P-80)

High-purity antimony. Antimony metal of 99.998% purity is available for use in studies of antimony semiconductor compounds. Metal is produced electrolytically. *Bradley Mining Co., 1022 Crocker Bldg., San Francisco 4, Calif.* (P-81)

Ultrasonic generator. Barium titanate transducer, driven by 50-watt generator at 1 Mc radiates vibrations of model 50 liquid-load ultrasonic generator. *McKenna Laboratories, 2503 Main St., Santa Monica, Cal.* (P-82)

Thermoregulator. Mercury thermoregulator is said to provide split-second temperature control within 0.02° F. *Philadelphia Scientific Glass Co., Abington, Pa.* (P-83)

Dissolver. Model 1-VT "Ultrafast" dissolver, 30 in. high, is available with impellers 3–4 in. in diameter. *Cowles Co., Inc., Cayuga 1, N. Y.* (P-84)

Ion-exchange columns. "Ultramax" variable-length column, with changeable porcelain filter disks for varying porosity, is available in ¼, ⅜, ½, ¾, and 1 in. tubing. *Fischer and Porter Co., 194 Jacksonville Rd., Hatboro, Pa.* (P-85)

Flash tester. Closed-cup flash tester includes built-in heat control, aluminum hot plate, and stainless-steel test burner tip. *Labline, Inc., 217–221 N. Desplaines St., Chicago 6, Ill.* (P-86)

Abrasive cutter. Wet-type abrasive cutter, for cutting nonferrous and refractory materials and glass, is suitable for bars, tubes and sheets; manually operated work head has 42-in. travel. *Eisler Engineering Co., Inc., Newark 3, N. J.* (P-87)

MATERIALS

Thermocouple Insulation

A 2,000° F thermocouple-wire insulation of swaged magnesia has recently

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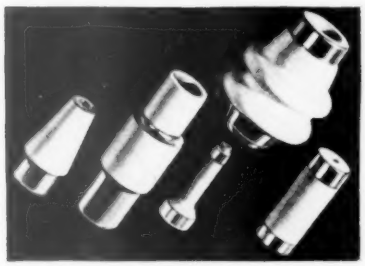
been developed. Consisting of thermocouple wires surrounded and insulated by pure magnesia, the assembly is inserted and swaged into a metal sheath. Said to be excellent for forming gastight units, it can be sharply bent and mounting flanges can be welded to the sheath. Outside diameters are 0.04–0.32 in. with two wires. *Aero Research Instrument Co., N. Hermitage Ave., Chicago 22, Ill.* (P-88)

Cable Insulations

Fiberglas yarns and asbestos spinning fibers have been combined to make a new series of water-resistant tapes for cable insulation. Known as Novabestos No. 7503,4, and 5, they are said to be less costly to use and superior in some respects to the all-asbestos materials they replace. *Owens-Corning Fiberglas Corp., Toledo 1, O.* (P-89)



Metallized Ceramics

Glazed or bisque refractory ceramic bodies are available with a metallic coating so that solders can be applied to form vacuum-tight joints with metals or other ceramics. The metallizing eliminates plating prior to hard or soft soldering. *Frenchtown Porcelain Co., 101 Muirhead Ave., Trenton, N. J.* (P-90)

MATERIALS IN BRIEF

Fire-repellant fabric. By fusing flame-resistant fabrics to metallic layers and topping with specially treated aluminum foil, a fabric has been developed that is said to protect against flame and radiant heat up to 2,500° F. Protective suits made of the material are available. *Far-Ex Corp., 75 West St., New York, N. Y.* (P-91)

Ceramic-coated aluminum. New production techniques are said to yield a ceramic-coated aluminum superior to earlier types. *The Bettinger Corp., Waltham, Mass.* (P-92)

Teflon-insulated wire. Temprex stranded hookup wire, made of extruded Teflon-coated wire, is suitable for high-temperature service (Class H

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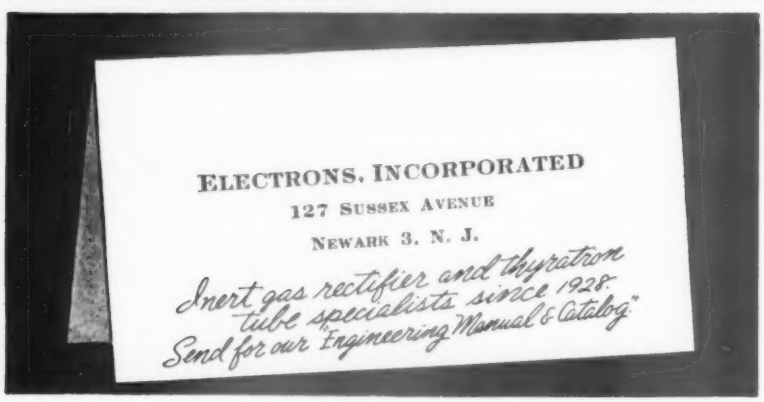
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Portable electroplater. Compact unit is said to apply protective, decorative, electrical, thermal, or antifriction coatings quickly. *Rapid Electroplating Process, Inc., 1414 S. Wabash Ave., Chicago 5, Ill.* (P-95)

ANALYTICAL INSTRUMENTS

Five Spectrometers

Three spectrometers cover infrared to near ultraviolet and mass spectrometer, masses 2–150; spectrophotometer includes ultraviolet and near infrared.

Model 21-620 mass spectrometer (above) uses cycloidal focus to eliminate peak distortion due to ion-energy spread. Scanning is possible to mass 180. *Consolidated Engineering Corp., 300 N. Sierra Madre Villa, Pasadena 8, Calif.* (P-96)

Model 14 spectrophotometer (console) automatically records spectra of 2,000 Å to 2.6 microns with 1.0-Å resolution in ultraviolet and visible ranges and 3.0 Å in near infrared. Accuracy is ±0.002 absorbance units or 0.2% of absorbance reading, whichever is greater. *Applied Physics Corp., Pasadena, Calif.* (P-97)

Automatic infrared analyzer sequences through 10 selected wavelengths in 10 min. Accuracy in 15–35% transmission range is ±0.002 absorbancy units, in 35–60% range, ±0.001 units; quantitative analyses have been made with average error of <0.1% absolute. Results are presented on typewriter, counter, or punch. *Perkin-Elmer Corp., Norwalk, Conn.* (P-98)

Direct-reading spectrometer, the Atomcounter, has double optical system and focal deck for simultaneous photographic qualitative or semiquantitative analysis. Analyses to 1% take <1 min. *Jarrell-Ash Co., 26 Farwell St., Newtonville, Mass.* (P-99)

Recording spectrometer has 2,100–7,000 Å range with 0.005-Å resolution at 3,072 Å. Grating has eight-speed rotation for continuous scanning or may be positioned manually; chart speeds are 2 in./min or 4 in./hr. *Leeds and Northrup Co., 4934 Stenton Ave., Philadelphia 44, Pa.* (P-100)

INDUSTRY NOTES

▶**Nuclear Research and Development, Inc.,** St. Louis, Mo., has separated its instrument sales program from its consulting activities. **R. R. Buntaine** is the new sales manager.

▶**Burroughs Corp., Detroit, Mich.,** has established a computer section that will market its desk-size electronic computer, the E101.

▶**Isotope Products Ltd.,** Oakville, Ont., Canada, has appointed **Bruce W. Smith** sales manager of their instrument division.

▶**Wyle Laboratories, El Segundo, Cal.,** offers expanded facilities for simulated-environment testing of assemblies or components.

▶**Perkin-Elmer Corp.,** Norwalk, Conn., has formed a Vernistat division for its precision variable ratio transformer. Division manager is **Eugene W. Dunstan.**

▶**General Ceramics Corp.,** Keasbey, N. J., has acquired **Advanced Vacuum Products, Inc.,** Stamford, Conn., to round out its line of hermetically-sealed terminal bushings.

▶**Heiland Research Corp.,** Denver, Col., manufacturers of scientific instruments and photographic flash equipment, has been purchased by **Minneapolis-Honeywell Regulator Co.,** Philadelphia, Pa.

▶**Berkeley Division, Beckman Instruments, Inc.,** Richmond, Cal., has available a national network of analog computing and simulation facilities, equipped with EASE computers. Complete engineering for industrial recording and control systems is available from a new group in this firm.

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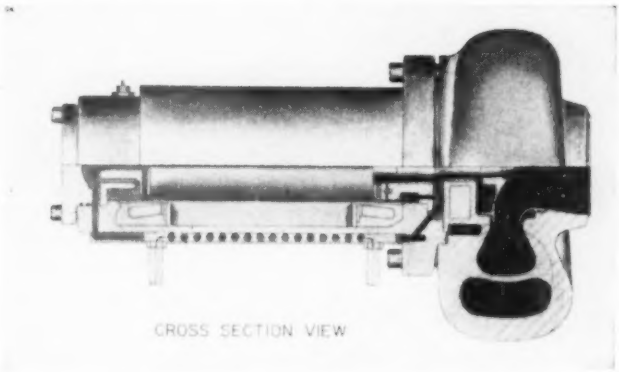

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▶**Telecomputing Corp.,** Burbank, Cal., makers of electronic equipment, has started work on a new 50,000 ft² plant.

▶**Consolidated Vacuum Corp.,** Rochester, N. Y., has a new 94,000 ft² plant, producing high vacuum systems.

LITERATURE AVAILABLE

Radioelements and accessories. New catalog C lists available radioelements, accessories and prices; technical data is also included. 163 p. *Atomic Energy of Canada, Ltd., P. O. Box 93, Ottawa, Canada.* (L-1)

Enriched stable isotopes. Inventory of electromagnetically-enriched stable isotopes gives data on available materials. *Stable Isotope Research and Production Division, P. O. Box P, Oak Ridge, Tenn.* (L-2)

Betatron laboratory. Bulletin 31BS121 describes planning and construction of laboratory. 7p. *Allis-Chalmers Mfg. Co., 935 S. 70th St., Milwaukee, Wis.* (L-3)

Spectrograph charts. Folders show charts from spectrograph and diffractometer analysis. 4p. *North American Philips Co. Inc., 750 S. Fulton St., Mount Vernon, N. Y.* (L-4)

Controllers standard. Tentative "Air Pressures for Pneumatic Controllers and Transmission Systems . . . " are available. 2p. *Scientific Apparatus Makers Association, 522 5th Ave., New York 36, N. Y.* (L-5)

Operation recorders. Bulletin OP-1505 describes electrical and mechanical recorders, both round-and strip-chart. *The Bristol Co., Waterbury 20, Conn.* (L-6)

Fine wire. Folder describes available fine wire, foil and ribbon. 4p. *Baker and Co., 113 Astor St., Newark 5, N. J.* (L-7)

Rate generator. Bulletin characterizes line of linear a-c rate generators. *Ford Instrument Co., 31-10 Thomson Ave., Long Island City 1, N. Y.* (L-8)

Mass spectrometer. Bulletin CEC-1824A describes process control with mass spectrometer. 12p. *Consolidated Engineering Corp., 300 Sierra Madre Ville, Pasadena 15, Cal.* (L-9)

Instrumentation magazine. Bimonthly publication "Recordings" is available. *Consolidated Engineering*

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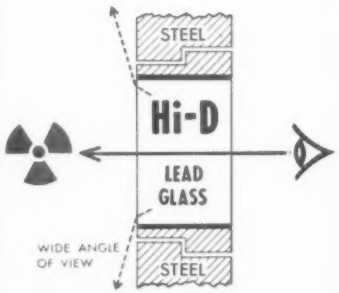

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Corp., 300 Sierra Madre Ville, Pasadena 15, Cal. (L-10)

Serological water baths. Section 3 catalog 100 shows serological water baths. 8p. *Chicago Surgical and Electrical Co., 217 N. Desplaines St., Chicago 6, Ill.* (L-11)

Conductive glass. Bulletin describes Pyrex E-C coated tubes for heating jackets. 8p. *Corning Glass Works, Corning, N. Y.* (L-12)

Panel indicators. Brochure describes line of standard range electrical indicating instruments. 4p. *DeJur Amsco Corp., 45-01 Northern Blvd., Long Island City 1, N. Y.* (L-13)

Miniature resolver. Bulletin discusses light-weight resolver that performs trigonometric operations. 2p. *Ford Instrument Co., 31-10 Thomson Ave., Long Island City 1, N. Y.* (L-14)

Pneumatic controllers. Catalog 53-10 describes stack-type pneumatic controllers. 12p. *Fischer and Porter Co., 148 Jacksonville Rd., Hatboro, Pa.* (L-15)

Aluminum joining. Sheet describes flux-less soldering or welding compound. 2p. *Sightmaster Corp., 111 Cedar St., New Rochelle, N. Y.* (L-16)

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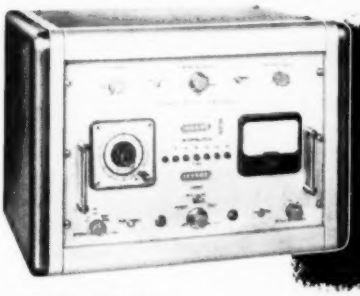

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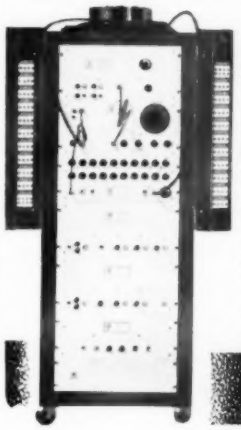

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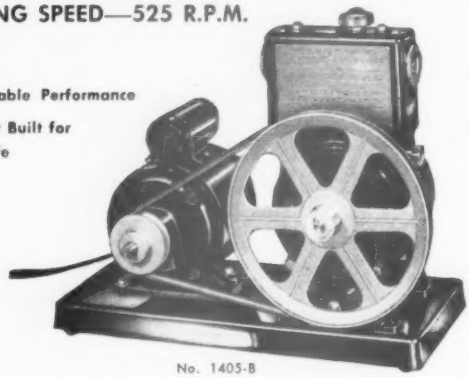

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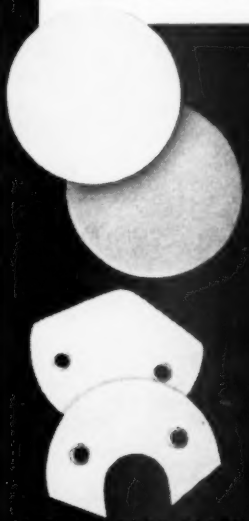

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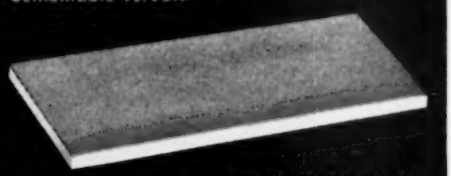

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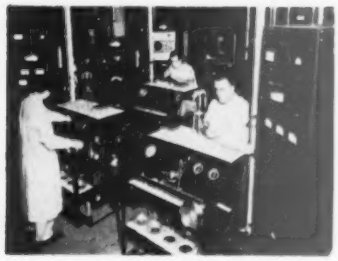

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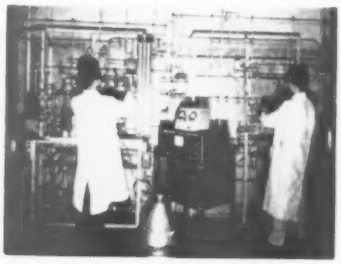

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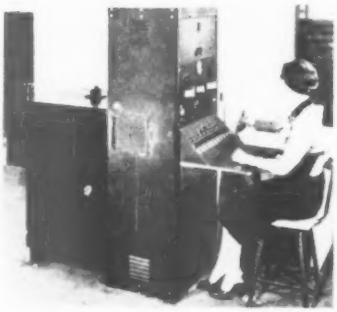

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Annual

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1954 1955

NUCLEONICS

BUYERS' GUIDE

1954–1955

An alphabetical listing of the manufacturers of equipment, materials, components and allied products used in basic research, development and applications of nuclear energy.

Every effort has been made to insure completeness and accuracy according to information supplied by the manufacturers questionnaired. Manufacturers who are advertisers in this issue are BOLD-FACED in the listings and page numbers of their advertisements shown. This makes it possible to obtain complete buying information on products quickly and easily by referring to those pages.

Compiled by the Research Staff of NUCLEONICS.

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Trane Company, The, La Crosse, Wis.
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United States Air Conditioning Corp., Como Ave., SE at 33rd, Minneapolis 14, Minn.
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Worthington Corp., Harrison, N. J.
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International Instruments Inc., P. O. Box 2954, New Haven 15, Conn.
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Pyramid Instrument Corp., 630 Merrick Rd., Lynbrook, N. Y.
Q.V.S., Inc., 20 N. 15th St., East Orange, N. J.
RADIO CORPORATION OF AMERICA, TUBE DIV., Harrison, N. J. ADV. PG. 19
Rawson Electrical Instrument Co., 114 Potter St., Cambridge 42, Mass.
Reliance Instrument Co., 3027 W. Van Buren St., Chicago 12, Ill.
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Sensitive Research Instrument Corp., 9 Elm Ave., Mt. Vernon, N. Y.
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Triplett Electrical Instrument Co., 286 Harmon Rd., Bluffton, Ohio
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Westberg Mfg. Co., 144 S. Coombs St., Napa, Calif.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.
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Industrial Control Co., Straight Path & Arlington Ave., Wyandanch, N. Y.
JORDAN ELECTRONIC MFG. CO., INC., Union Bldg., 119 E. Union St., Pasadena 1, Calif. ADV. PG. 129, 136
Keithley Instruments, 3868 Carnegie Ave., Cleveland, Ohio
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Precision Apparatus Co., Inc., 92–27 Horace Harding Blvd., Elmhurst, N. Y.
Q.V.S., Inc., 20 N. 15th St., East Orange, N. J.
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Glenco Corp., Metuchen, N. J.
Heath Co., Benton Harbor, Mich.
Hickok Electrical Instrument Co., 10514 Dupont Ave., Cleveland 18, Ohio
International Instruments, Inc., P. O. Box 2954, New Haven 15, Conn.
Lesa, Via Bergamo 21, Milan, Italy
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Marion Electrical Instrument Co., 402 Canal St., Manchester, N. H.
Measurement Engineering Ltd., Arnprior, Ontario, Canada
Meters, Inc., 5353 N. Keystone Ave., Indianapolis 20, Ind.
Metropolitan Electronics & Instruments Co., 106 Fifth Ave., New York 11, N. Y.
Millivac Instruments, 444 Second St., Schenectady, N. Y.
Phaostron Co., 151 Pasadena Ave., South Pasadena, Calif.
Q.V.S., Inc., 20 N. 15th St., East Orange, N. J.
RADIO CORPORATION OF AMERICA, TUBE DIV., Harrison, N. J. ADV. PG. 19
Rawson Electrical Instrument Co., 114 Potter St., Cambridge 42, Mass.
Roller-Smith Corp., 1825 W. Market, Bethlehem, Pa.
SCIENTIFIC SPECIALTIES CORP., Snow & Union Sts., Brighton 35, Mass. ADV. PG. 138
Sensitive Research Instrument Corp., 9 Elm Ave., Mt. Vernon, N. Y.
Shallcross Mfg. Co., 10 Jackson Ave., Collingdale, Pa.
Shurite Meters, 35 Hamilton St., New Haven 8, Conn.
Simpson Electric Co., Div. of America Gage & Machine Co., 5208 W. Kinzie St., Chicago 44, Ill.
Sterling Mfg. Co., 7201 Wentworth, Cleveland, Ohio
Supreme, Inc., Box MH552, Greenwood, Miss.
Triplett Electrical Instrument Co., 286 Harmon Rd., Bluffton, Ohio
WELCH SCIENTIFIC CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.
Weston Electrical Instrument Corp., 614 Frelinghuysen Ave., Newark 5, N. J.
Winslow Co., Inc., 9 Liberty St., Newark, N. J.

AMPLIFIERS—Audio Frequency

Advance Electronics Co., 451 Highland Ave., Passaic, N. J.
Air Associates, Inc., Teterboro, N. J.
Alcar Instruments, Inc., 20–21 Wagaraw Rd., Fair Lawn, N. J.
ALLIED RADIO CORP., 100 N. Western Ave., Chicago 80, Ill. ADV. PG. 122
American Electronic Laboratories, Inc., 641 Arch St., Philadelphia 6, Pa.
Ampex Corp., 934 Charter St., Redwood City, Calif.
Amplifier Corp. of America, 396 Broadway, New York 13, N. Y.
Audio Equipment Co., Inc., 805 Middle Neck Rd., Great Neck, N. Y.
Audio Instrument Co., Inc., 133 W. 14th St., New York 11, N. Y.

Audio Products Corp., 2265 Westwood Blvd., Los Angeles 64, Calif.
Ballantine Laboratories, Inc., Boonton, N. J.
Barker & Williamson, 235 Fairfield Ave., Upper Darby, Pa.
Bell Sound Systems, Inc., 555 Marion Rd., Columbus 7, Ohio
Bogen Co., Inc., David, 29 Ninth Ave., New York 14, N. Y.
Borg Corp., George W., Borg Equipment Div., Janesville, Wis.
C.G.S. Laboratories, Inc., 391 Ludlow St., Stamford, Conn.
Cardwell Electronic Productions Corp., Allen D., 97 Whiting St., Plainville, Conn.
Centralab Div. of Globe-Union, Inc., 900 E. Keefe Ave., Milwaukee 1, Wis.
Chatham Electronics Corp., Livingston, N. J.
Cinema Engineering Co., Div. of Aerovox Corp., 1100 Chestnut St., Burbank, Calif.
Collins Radio Co., Cedar Rapids, Iowa
Connecticut Telephone & Electric Corp., 70 Britania St., Meriden, Conn.
Cossor, Ltd., 301 Windsor St., Halifax, N. S., Canada
Daystrom Instrument Co., Archbald, Pa.
DeMornay-Bonardi, Inc., 780 S. Arroyo Parkway, Pasadena, Calif.
Electro Medical Lab., Inc., South Woodstock 6, Vt.
Electronic Research Associates, Inc., 715 Main St., North Caldwell, N. J.
Elm Laboratories, 18 South Broadway, Dobbs Ferry, N. Y.
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
Endevco Corp., 689 S. Fair Oaks Ave., Pasadena, Calif.
Federal Mfg. & Engineering Corp., 211 Steuben St., Brooklyn 5, N. Y.
Fluke Mfg. Co., Inc., John, 1111 W. Nickerson St., Seattle 99, Wash.
FORD INSTRUMENT CO., DIV. OF SPERRY CORP., 31–10 Thomson Ave., Long Island City, N. Y. ADV. PG. 105
Franklin Electronics, Inc., 415 W. Pike St., Philadelphia 40, Pa.
Freed Transformer Co., Inc., 1736 Weirfield St., Brooklyn 27, N. Y.
FURST ELECTRONICS, INC., 3330-A W. Lawrence Ave., Chicago 25, Ill. ADV. PG. 126
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
Gulton Mfg. Corp., 212 Durham Ave., Metuchen, N. J.
Heath Co., Benton Harbor, Mich.
Hewlett-Packard Co., 395 Page Mill Rd., Palo Alto, Calif.
Hycon Mfg. Co., 2961 E. Colorado St., Pasadena 8, Calif.
Industrial Test Equipment Co., 55 E. 11th St., New York 3, N. Y.
Infra Electronic Corp., Roseland, N. J.
Insuline Corp. of America, 186 Granite St., Manchester, N. H.
Interelectronics Corp., 2432 Grand Concourse, New York 58, N. Y.
International Research Associates, 2221 Warwick Ave., Santa Monica, Calif.
Kahn & Co., Inc., 541 Windsor St., Hartford, Conn.
Keithley Instruments, 3868 Carnegie Ave., Cleveland, Ohio
Krahn-Hite Instrument Co., 580 Massachusetts Ave., Cambridge 39, Mass.
Langevin Mfg. Corp., 37 W. 65th St., New York 23, N. Y.
Lavoie Laboratories, Morganville, N. J.
Lee Laboratories, Inc., Genesee, Pa.
McIntosh Lab., Inc., 320 Water St., Binghamton, N. Y.
Macdonald Co., Inc., W. S., 33 University Rd., Cambridge 38, Mass.
Magnavox Co., Components Div., Fort Wayne 4, Ind.
Measurement Engineering Ltd., Arnprior, Ontario, Canada
Mercury Electronic Co., Box 450, Red Bank, N. J.
Michel Mfg. Co., 227 N. Water St., Milwaukee 2, Wis.
National Intercommunicating Systems, Inc., 1130 N. Milwaukee Ave., Chicago 22, Ill.
Newcomb Audio Products Co., 6824 Lexington Ave., Hollywood 38, Calif.
New London Instrument Co., P. O. Box 189, New London, Conn.
Northeastern Engineering, Inc., Manchester, N. H.
Ortho Filter Corp., 198 Albion Ave., Paterson 2, N. J.
Pacific Division, Bendix Aviation Corp., 11600 Sherman Way, North Hollywood, Calif.
Paraplegics Mfg. Co., Inc., 100068 Franklin Ave., Franklin Park, Ill.
Pentron Corp., 221 E. Cullerton St., Chicago 16, Ill.
Peschel Electronics, Inc., 13 Garden St., New Rochelle, N. Y.
Plastics & Electronics Co., 272 Northland Ave., Buffalo 8, N. Y.
Precision Electronics, Inc., 9101 King Ave., Franklin Park, Ill.
Press Wireless Laboratories, Inc., 25 Prospect Place, West Newton 65, Mass.
Radio Corporation of America, Engineering Products Div., Camden, N. J.
Radio Sonic Corp., 32 W. 22nd St., New York 10, N. Y.
Rauland-Borg Corp., 3515 W. Addison St., Chicago 18, Ill.
Remington Rand, Inc., Engineering Research Associates Div., 1902 W. Minnehaha Ave., St. Paul W4, Minn.
Rosdel Engineering Corp., 2351 Riverside Drive, Los Angeles 39, Calif.
Scott, Inc., Herman Hosmer, 385 Putman Ave., Cambridge, Mass.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Specialty Engineering Div. of Specialty Assembling & Packing Co., 79 Clifton Place, Brooklyn 38, N. Y.
Square Root Mfg. Corp., 391 Saw Mill River Rd., Yonkers, N. Y.
Standard Electronics Research Corp., 2 East End Ave., New York 21, N. Y.
Stephens Mfg. Corp., 8538 Warner Drive, Culver City, Calif.
Sunshine Scientific Instrument, 180–12 Grant Ave., Philadelphia 15, Pa.
Tektronix, Inc., P. O. Box 831, Portland 7, Ore.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Telonic Industries, 444 Rural St., Indianapolis 1, Ind.
Thordarson-Meissner Mfg. Divs., Mt. Carmel, Ill.
Trott Electronics Co., 1944 Clinton Ave., N., Rochester 21, N. Y.
Ultrasonic Corp., 640 Memorial Drive, Cambridge 39, Mass.
Varo Mfg. Co., Inc., 1801 Walnut St., Garland, Texas
Videon Electronic Corp., 902 E. Michigan St., Indianapolis 2, Ind.
Walkirt Co., 145 W. Hazel, Inglewood, Calif.
Waveforms, Inc., 333 Sixth Ave., New York 14, N. Y.
West Coast Electronics Co., 5873 W. Jefferson, Los Angeles 16, Calif.
Western Sound & Electric Labs, Inc., 805 S. Fifth St., Milwaukee 4, Wis.
Yellow Springs Instrument Co., Inc., P. O. Box 106, Yellow Springs, Ohio

AMPLIFIERS—d-c

Advance Electronics Co., 451 Highland Ave., Passaic, N. J.
Air Associates, Inc., Teterboro, N. J.
Allegany Instrument Co., Inc., Cumberland, Md.
American Electronic Laboratories, Inc., 641 Arch St., Philadelphia 6, Pa.
Atlas Coil, Inc., Cottage St., Derby, Conn.
ATOMIC INSTRUMENT CO., 84 Massachusetts Ave., Cambridge 39, Mass. ADV. PG. Inside Back Cover
Audio Equipment Co., Inc., 805 Middle Neck Rd., Great Neck, N. Y.
Avion Instrument Corp., Div. of American Car & Foundry Co., 295 State Highway No. 17, Paramus, N. J.
Barker & Williamson, 235 Fairfield Ave., Upper Darby, Pa.
Bogue Electric Mfg. Co., 52 Iowa Ave., Paterson 3, N. J.
Brush Electronics Co., 3405 Perkins Ave., Cleveland 14, Ohio
Caltron Co., 1406 S. Hobart Blvd., Los Angeles 6, Calif.
CENTRAL SALES & MFG. CORP., 2 Richwood Place, Danville, N. J. ADV. PG. 140
Collins Radio Co., Cedar Rapids, Iowa
Computing Devices of Canada, Ltd., P. O. Box 508, Ottawa 4, Ontario, Canada
CONSOLIDATED ENGINEERING CORP., 300 N. Sierra Madre Villa, Pasadena 15, Calif. ADV. PG. Inside Front Cover
Cossor, Ltd., 301 Windsor St., Halifax, N. S., Canada
Daystrom Instrument Co., Archbald, Pa.
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
Doelcam Corp., 1400 Soldiers Field Rd., Boston 35, Mass.
Eastern Precision Resistor Corp., 130–11 90th Ave., Richmond Hill, N. Y.
Edin Co., Inc., 207 Main St., Worcester, Mass.
EKCO ELECTRONICS LTD., EKCO WORKS, Southend-on-Sea, Essex, England. ADV. PG. 127
Electrodyne Co., Endicott St., Norwood, Mass.
Electro-Mechanical Research, Inc., 64 Main St., Ridgefield, Conn.
Electronic Associates, Inc., Long Branch, N. J.
Electronic Research Associates, Inc., 715 Main St., North Caldwell, N. J.
Electronic Tube Corp., 1200 E. Mermaid Lane, Philadelphia 18, Pa.
Elm Laboratories, 18 South Broadway, Dobbs Ferry, N. Y.
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
Farrand Optical Co., Inc., Bronx Blvd. at E. 238th St., New York 70, N. Y.
Federal Telephone & Radio Co., A Div. of International Telephone & Telegraph Corp., 100 Kingsland Rd., Clifton, N. J.
Fielden Instrument Div., Robertshaw-Fulton Controls Co., 2920 N. 4th St., Philadelphia 33, Pa.
FORD INSTRUMENT CO., DIV. OF SPERRY CORP., 31–10 Thomson Ave., Long Island City, N. Y. ADV. PG. 105
Franklin Electronics, Inc., 415 W. Pike St., Philadelphia 40, Pa.
FURST ELECTRONICS, INC., 3330-A W. Lawrence Ave., Chicago 25, Ill. ADV. PG. 126
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
Goodyear Aircraft Corp., 1210 Massillion Rd., Akron 15, Ohio
Hagan Corp., 323 Fourth Ave., Pittsburgh 22, Pa.
Hanover Developments, 401 E. 74th St., New York 21, N. Y.
Hycon Mfg. Co., 2961 E. Colorado St., Pasadena 8, Calif.
Industrial Control Co., Straight Path & Arlington Ave., Wyandanch, N. Y.
Industrial Science, 63–15 Forest Ave., Ridgewood 27, N. Y.
Inet Div. of Leach Corp., 4441 Santa Fe Ave., Los Angeles 58, Calif.
Infra Electronic Corp., Roseland, N. J.
Insuline Corp. of America, 186 Granite St., Manchester, N. H.
International Research Associates, 2221 Warwick Ave., Santa Monica, Calif.
James Vibrapowr Co., 4036 N. Rockwell St., Chicago 18, Ill.
Kahn & Co., Inc., 541 Windsor St., Hartford, Conn.
Kay-Lab, Inc., 1090 Morena Blvd., San Diego 10, Calif.
Keithley Instruments, 3868 Carnegie Ave., Cleveland, Ohio
Keystone Products Co., 904–6 23rd St., Union City, N. J.
LaRoe Instruments, Inc., Box 5906, Bethesda 14, Md.
Lavoie Laboratories, Morganville, N. J.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 131
Liston-Becker Instrument Co., Inc., 649 Hope St., Springdale, Conn.
Magnavox Co., Components Div., Fort Wayne 4, Ind.
Matthew Laboratories, 345 Nepperhan Ave., Yonkers 2, N. Y.
Maxson Corp., W. L., 460 W. 34th St., New York 1, N. Y.
Measurement Engineering Ltd., Arnprior, Ontario, Canada
Mercury Electronic Co., Box 450, Red Bank, N. J.
Mid-Century Instrumatic Corp., 611 Broadway, New York 12, N. Y.
Midwestern Geophysical Lab., 3400 S. Harvard, Tulsa, Okla.
Miller Instruments, Inc., William, 325 N. Halstead Ave., Pasadena 8, Calif.
Millivac Instruments, 444 Second St., Schenectady, N. Y.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Back Cover
Offner Electronics, Inc., 5320 W. Kedzie Ave., Chicago 25, Ill.
Pacific Division, Bendix Aviation Corp., 11600 Sherman Way, North Hollywood, Calif.
Pentron Corp., 211 E. Cullerton St., Chicago 16, Ill.
Peschel Electronics, Inc., 13 Garden St., New Rochelle, N. Y.
Phoenix Precision Instrument Co., 3803–05 N. 5th St., Philadelphia, Pa.
Photron Instrument Co., 6516 Detroit Ave., Cleveland 2, Ohio
Polytechnic Research & Development Co., Inc., 202 Tillary St., Brooklyn 1, N. Y.
Press Wireless Laboratories, Inc., 25 Prospect Place, West Newton 65, Mass.
Process & Instruments, 15 Stone Ave., Brooklyn 33, N. Y.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
Radio Corporation of America, Engineering Products Div., Camden, N. J.
Radio Sonic Corp., 32 W. 22nd St., New York 10, N. Y.
Sanborn Co., 39 Osborn St., Cambridge, Mass.
Sanders Associates, Inc., Nashua, N. H.
Servo-Tek Products Corp., 1086 Gaffle Rd., Hawthorne, N. J.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Standard Electronics Research Corp., 2 East End Ave., New York 21, N. Y.
Sunshine Scientific Instrument, 180–12 Grant Ave., Philadelphia 15, Pa.
Tektronix, Inc., P. O. Box 831, Portland 7, Ore.
Telonic Industries, 444 Rural St., Indianapolis 1, Ind.
Thordarson-Meissner Mfg. Divs., Mt. Carmel, Ill.
Trott Electronics Co., 1944 Clinton Ave., N. Rochester 21, N. Y.
Ultrasonic Corp., 640 Memorial Drive, Cambridge 39, Mass.
Volkers & Schaffer Mfg. Corp., P. O. Box 995, Schenectady, N. Y.
Western Radiation Lab., 1107 W. 24th St., Los Angeles 7, Calif.
Western Sound & Electric Labs., Inc., 805 S. Fifth St., Milwaukee 4, Wis.
Weston Electrical Instrument Corp., 614 Frelinghuysen Ave., Newark 5, N. J.

AMPLIFIERS—Hydraulic

FORD INSTRUMENT CO., DIV. OF SPERRY CORP., 31–10 Thomson Ave., Long Island City, N. Y. ADV. PG. 105
Hagan Corp., 323 Fourth Ave., Pittsburgh 22, Pa.
Infra Electronic Corp., Roseland, N. J.
Lavoie Laboratories, Morganville, N. J.
Pentron Corp., 221 E. Cullerton St., Chicago 16, Ill.
Sanders Associates, Inc., Nashua, N. H.
Trans-Sonics, Inc., Bedford Airport, Bedford, Mass.
Ultrasonic Corp., 640 Memorial Drive, Cambridge 39, Mass.

AMPLIFIERS—Linear

Advance Electronics Co., 451 Highland Ave., Passaic, N. J.
Air Associates, Inc., Teterboro, N. J.
ATOMIC INSTRUMENT CO., 84 Massachusetts Ave., Cambridge 39, Mass. ADV. PG. Inside Back Cover
Atomlab, Inc., 489 Fifth Ave., New York 17, N. Y.
Audio Instrument Co., Inc., 133 W. 14th St., New York 11, N. Y.
Barker & Williamson, 235 Fairfield Ave., Upper Darby, Pa.
BEVA LABORATORY, 1640 Olden Ave., Ext., Trenton 9, N. J. ADV. PG. 116
CONSOLIDATED ENGINEERING CORP., 300 N. Sierra Madre Villa, Pasadena 15, Calif. ADV. PG. Inside Front Cover
Cossor, Ltd., 301 Windsor St., Halifax, N. S., Canada
Cubic Corp., 2841 Canon St., San Diego 6, Calif.
DeMornay-Bonardi, Inc., 780 S. Arroyo Parkway, Pasadena, Calif.
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
Doelcam Corp., 1400 Soldiers Field Rd., Boston 35, Mass.
Edin Co., Inc., 207 Main St., Worcester, Mass.
EKCO ELECTRONICS LTD., EKCO WORKS, Southend-on-Sea, Essex, England. ADV. PG. 127
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
Fleming Radio (Developments) Ltd., 18–20 Laystall St., London, E.C. 1, England
FORD INSTRUMENT CO., DIV. OF SPERRY CORP., 31–10 Thomson Ave., Long Island City, N. Y. ADV. PG. 105
Goodyear Aircraft Corp., 1210 Massillon Rd., Akron 15, Ohio
Gulton Mfg. Corp., 212 Durham Ave., Metuchen, N. J.
Hagan Corp., 323 Fourth Ave., Pittsburgh 22, Pa.
Hathaway Instrument Co., 1315 S. Clarkson St., Denver 10, Colo.
Hycon Mfg. Co., 2961 E. Colorado St., Pasadena 8, Calif.
Industrial Electronics, Inc., 8060 Wheeler St., Detroit 10, Mich.
Industrial Test Equipment Co., 55 E. 11th St., New York 3, N. Y.
Infra Electronic Corp., Roseland, N. J.
Krohn-Hite Instrument Co., 580 Massachusetts Ave., Cambridge 39, Mass.
Lapp Insulator Co., Inc., 31 Gilbert St., LeRoy, N. Y.
McIntosh Lab., Inc., 320 Water St., Binghamton, N. Y.
Matthew Laboratories, 345 Nepperhan Ave., Yonkers 2, N. Y.
Maxson Corp., W. L., 460 W. 34th St., New York 1, N. Y.
Miller Instruments, Inc., William, 325 N. Halstead Ave., Pasadena 8, Calif.
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
North American Philips, Co., Inc., 750 S. Fulton Ave., Mt. Vernon, N. Y.
Ortho Filter Corp., 198 Albion Ave., Paterson 2, N. J.
Pentron Corp., 221 E. Cullerton St., Chicago 16, Ill.
Phebco, Inc., 3640 Woodland Ave., Baltimore 15, Md.
Polytechnic Research & Development Co., Inc., 202 Tillary St., Brooklyn 1, N. Y.
Press Wireless Laboratories, Inc., 25 Prospect Place, West Newton 65, Mass.
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
Radiation Instrument Co., P. O. Box 733, Silver Spring, Md.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
Radio Corporation of America, Engineering Products Div., Camden, N. J.
Scott, Inc., Hermon Hosmer, 385 Putnam Ave., Cambridge, Mass.
Standard Electronics Research Corp., 2 East End Ave., New York 21, N. Y.
TECHNICAL MEASUREMENT CORP., 140–142 State St., New Haven, Conn. ADV. PG. 128
Telechrome, Inc., 88 Merrick Rd., Amityville, N. Y.
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
Tratt Electronics Co., 1944 Clinton Ave., N., Rochester 21, N. Y.
Ultrasonic Corp., 640 Memorial Drive, Cambridge 39, Mass.
West Coast Electronics Co., 5873 W. Jefferson, Los Angeles 16, Calif.
Western Sound & Electric Labs., Inc., 805 S. Fifth St., Milwaukee 4, Wis.
Yellow Springs Instrument Co., Inc., P. O. Box 106, Yellow Springs, Ohio

AMPLIFIERS—Logarithmic

Associated Engineering Corp. of Boston, 65 Kent St., Brookline 46, Mass.
Audio Instrument Co. Inc., 133 W. 14th St., New York 11, N. Y.
Cossor, Ltd., 301 Windsor St., Halifax, N. S., Canada
Cubic Corp., 2841 Canon St., San Diego 6, Calif.
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
FORD INSTRUMENT CO., DIV. OF SPERRY CORP., 31–10 Thomson Ave., Long Island City, N. Y. ADV. PG. 105
Franklin Electronics, Inc., 415 W. Pike St., Philadelphia 40, Pa.
Infra Electronic Corp., Roseland, N. J.
Insuline Corp., of America, 186 Granite St., Manchester, N. H.
Kay-Lab, Inc., 1090 Morena Blvd., San Diego 10, Calif.
Lapp Insulator Co., Inc., 31 Gilbert St., LeRoy, N. Y.
Matthew Laboratories, 345 Nepperhan Ave., Yonkers 2, N. Y.
Maxson Corp., W. L., 460 W. 34th St., New York 1, N. Y.
Measurement Engineering Ltd., Arnprior, Ontario, Canada
Pentron Corp., 221 E. Cullerton St., Chicago 16, Ill.
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
Sanborn Co., 39 Osborn St., Cambridge, Mass.
Scott, Inc., Hermon Hosmer, 385 Putnam Ave., Cambridge, Mass.
Thompson Products, Inc., 2196 Clarkwood Ave., Cleveland 3, Ohio
Tratt Electronics Co., 1944 Clinton Ave., N. Rochester 21, N. Y.
Ultrasonic Corp., 640 Memorial Drive, Cambridge 39, Mass.
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 107
Waveforms, Inc., 333 Sixth Ave., New York 14, N. Y.
WELCH SCIENTIFIC CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148

AMPLIFIERS—Magnetic

Aeravox Corp., 740 Belleville Ave., New Bedford, Mass.
Ahrendt Instrument Co., 4910 Calvert Rd., College Park, Md.
Air Associates, Inc., Teterboro, N. J.
Aircraft Transformer Corp., West & Willow Aves., Long Branch, N. J.
Atlas Engineering Co., 3 Edgewood St., Roxbury, Mass.
Avion Instrument Corp., Div. of American Car & Foundry Co., 295 State Highway #17, Paramus, N. J.
Barker & Williamson, 235 Fairfield Ave., Upper Darby, Pa.
Belock Instrument Corp., 13–11 111th St., College Point, N. Y.
Bill Jack Scientific Instrument Co., P. O. Box C-39, Solana Beach, Calif.
Bogue Electric Mfg. Co., 52 Iowa Ave., Paterson 3, N. J.
C.G.S. Laboratories, Inc., 391 Ludlow St., Stamford, Conn.
Caltron Co., 1406 S. Hobart Blvd., Los Angeles 6, Calif.
Celco Constantine Engineering Labs., Co., Island Ave., Mahwah, N. J.
Communication Accessories Co., Red Bridge Rd., Hickman Hills, Mo.
Computer Control Co., Inc., 92 Broad St., Babson Park 57, Mass.
Connecticut Telephone & Electric Corp., 70 Brittania St., Meriden, Conn.
Cossor, Ltd., 301 Windsor St., Halifax, N. S., Canada
D & R Ltd., 402 E. Gutierrez St., Santa Barbara, Calif.
Daystrom Instrument Co., Archbald, Pa.
Doelcam Corp., 1400 Soldiers Field Rd., Boston 35, Mass.
Eclipse-Pioneer Div., Bendix Aviation Corp., Teterboro, N. J.
Electronic Components, Inc., 55 E. 11th St., Paterson, N. J.
Federal Telephone & Radio Co., A Div. of International Telephone & Telegraph Corp., 100 Kingsland Rd., Clifton, N. J.
Fisher Engineering, Inc., 2060 U. S. 24 East, P. O. Box 327, Huntington, Ind.
FORD INSTRUMENT CO., DIV. OF SPERRY CORP., 31–10 Thomson Ave., Long Island City, N. Y. ADV. PG. 105
Freed Transformer Co., Inc., 1736 Weirfield St., Brooklyn 27, N. Y.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
General Magnetics, Inc., 135 Bloomfield Ave., Bloomfield, N. J.
Goldak Co., 1544 W. Glenoaks Blvd., Glendale 1, Calif.
Gyromechanisms, Inc., Halesite, N. Y.
Hycor Co., Inc., 11423 Vanowen St., North Hollywood, Calif.
Industrial Control Co., Straight Path & Arlington Ave., Wyandanch, N. Y.
Industrial Transformer Corp., Gouldsboro, Pa.
Inet Div. of Leach Corp., 4441 Santa Fe Ave., Los Angeles 58, Calif.
Infra Electronic Corp., Roseland, N. J.
Jabbins Electronic Enterprises, Menlo Park, Calif.
Kearfott Co., Inc., 14844 Oxnard St., Van Nuys, Calif.
Ketay Instrument Corp., 555 Broadway, New York 12, N. Y.
Keystone Products Co., 904–6 23rd St., Union City, N. J.
KOLLSMAN INSTRUMENT CORP., 80–08 45th Ave., Elmhurst, N. Y. ADV. PG. 11
Laboratory for Electronics, Inc., 75 Pitts St., Boston 14, Mass.
Librascope, Inc., 808 Western Ave., Glendale, Calif.
Magnavox Co., Components Div., Fort Wayne 4, Ind.
Magnetic Amplifiers, Inc., 632 Tinton Ave., New York 55, N. Y.
Magnetic Research Corp., 200 E. Center St., El Segundo, Calif.
Magnetics, Inc., Box 230–A, Butler, Pa.
Magnetics Research Co., 142 King St., Chappaqua, N. Y.
Maxson Corp., W. L., 460 W. 34th St., New York 1, N. Y.
Mercury Electronic Co., Box 450, Red Bank, N. J.
Miller Instruments, Inc., William, 325 N. Halstead Ave., Pasadena 8, Calif.
Minnesota Electronics Corp., 1058 University Ave., St. Paul 4, Minn.
Ortho Filter Corp., 198 Albion Ave., Paterson 2, N. J.
Pentron Corp., 221 E. Cullerton St., Chicago 16, Ill.
Perkin Engineering Corp., 345 Kansas St., El Segundo, Calif.
Permaflux Corp., 4900 W. Grand Ave., Chicago 39, Ill.
Polytechnic Research & Development Co., Inc., 202 Tillary St., Brooklyn 1, N. Y.
Power Transformer Co., Inc., 532 Mulberry St., Newark 5, N. J.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
RAPID ELECTRIC CO., 2881 Middletown Rd., New York, N. Y. ADV. PG. 124
Raytheon Mfg. Co., Equipment Operations, Waltham 54, Mass.
Regulator Equipment Corp., 56 California Ave., Paterson 3, N. J.
Sangamo Electric Co., Springfield, Ill.
Servomechanisms, Inc., 500 Franklin Ave., Garden City, N. Y.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Specialties, Inc., Skunks Misery Rd., Syosset, N. Y.
Square Root Mfg. Corp., 391 Saw Mill River Rd., Yonkers, N. Y.
Standard Electronics Research Corp., 2 East End Ave., New York 21, N. Y.
Televiso Corp., 1415 Golf Rd., Des Plaines, Ill.
Thompson Products, Inc., 2196 Clarkwood Ave., Cleveland 3, Ohio
Thordarson-Meissner Mfg. Divs., Mt. Carmel, Ill.
Torwico Electronics, Inc., 975 Frelinghuysen Ave., Newark 5, N. J.
Transformers, Inc., 532 North St., Endicott, N. Y.
Transicoil Corp., 107 Grand St., New York 13, N. Y.
Ultrasonic Corp., 640 Memorial Drive, Cambridge 39, Mass.
U. S. Electronics Corp., 276 Warren St., Lyndhurst, N. J.
Vari-L Co., Inc., P. O. Box 1433, Stamford, Conn.
Varo Mfg. Co., Inc., 1801 Walnut St., Garland, Texas
Vickers Electric Division, Vickers, Inc., 1840 Locust St., St. Louis 3, Mo.
Walland-Pierce Corp., 1928 Pacific Coast Highway, Lomita, Calif.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.

AMPLIFIERS—Pulse

Advance Electronics Co., 451 Highland Ave., Passaic, N. J.
Air Associates, Inc., Teterboro, N. J.
American Electronic Laboratories, Inc., 641 Arch St., Philadelphia 6, Pa.
ATOMIC INSTRUMENT CO., 84 Massachusetts Ave., Cambridge 39, Mass. ADV. PG. Inside Back Cover
Atomlab, Inc., 489 Fifth Ave., New York 17, N. Y.

Barker & Williamson, 235 Fairfield Ave., Upper Darby, Pa.
BEVA LABORATORY, 1640 Olden Ave., Ext., Trenton 9, N. J. ADV. PG. 116
Bristol Engineering Corp., Lincoln Ave. & Pond St., Bristol 1, Pa.
Burndept Ltd., West St., Erith, Kent, United Kingdom
C.G.S. Laboratories, Inc., 391 Ludlow St., Stamford, Conn.
Chatham Electronics Corp., Livingston, N. J.
CLEGG LABORATORIES, INC., 142 S. Livingston Ave., Livingston, N. J. ADV. PG. 110
Collins Radio Co., Cedar Rapids, Iowa
Control Electronics Co., Inc., 1925 New York Ave., Huntington Station, N. Y.
Cossor, Ltd., 301 Windsor St., Halifax, N. S., Canada
DeMornay-Bonardi, Inc., 780 S. Arroyo Parkway, Pasadena, Calif.
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
Electronic Components, Inc., 55 E. 11th St., Paterson, N. J.
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
Federal Mfg. & Engineering Corp., 211 Steuben St., Brooklyn 5, N. Y.
Federal Telephone & Radio Co., A Div. of International Telephone & Telegraph Corp., 100 Kingsland Rd., Clifton, N. J.
Fisher Engineering, Inc., 2060 U. S. 24 East, P. O. Box 327, Huntington, Ind.
Fleming Radio (Developments) Ltd., 18–20 Laystall St., London, E.C. 1, England
Garod Radio Corp., 79 Washington St., Brooklyn 1, N. Y.
Hewlett-Packard Co., 395 Page Mill Rd., Palo Alto, Calif.
Hycon Mfg. Co., 2961 E. Colorado St., Pasadena 8, Calif.
Infra Electronic Corp., Roseland, N. J.
Insuline Corp. of America, 186 Granite St., Manchester, N. H.
International Research Associates, 2221 Warwick Ave., Santa Monica, Calif.
Kearfott Co., Inc., 14844 Oxnard St., Van Nuys, Calif.
Laboratory for Electronics, Inc., 75 Pitts St., Boston 14, Mass.
Lavoie Laboratories, Morganville, N. J.
Linear Equipment Labs., Inc., Brightwater Place, Massapequa, N. Y.
McShan Development Corp., 71 Murray St., New York 7, N. Y.
Magnavox Co., Components Div., Fort Wayne 4, Ind.
North American Philips Co., Inc., 750 S. Fulton Ave., Mt. Vernon, N. Y.
NUCLEAR MEASUREMENTS CORP., 2460 N. Arlington Ave., Indianapolis 18, Ind. ADV. PG. 122
Ortho Filter Corp., 198 Albion Ave., Paterson 2, N. J.
Orthon Corp., 198 Albion Ave., Paterson 2, N. J.
Ossian Mfg. Co., Box 151A, Ossian, Ind.
Pentron Corp., 221 E. Cullerton St., Chicago 16, Ill.
Phebco Inc., 3640 Woodland Ave., Baltimore 15, Md.
Potter Instrument Co., 115 Cutter Mill Rd., Great Neck, N. Y.
Press Wireless Laboratories, Inc., 25 Prospect Place, West Newton 65, Mass.
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
Radiation Instrument Co., P. O. Box 733, Silver Spring, Md.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
Resdel Engineering Corp., 2351 Riverside Drive, Los Angeles 39, Calif.
Rutherford Electronics Corp., 3707 S. Robertson Blvd., Culver City, Calif.
Specialty Engineering Div. of Specialty Assembling & Packing Co., 79 Clifton Place, Brooklyn 38, N. Y.
Spencer-Kennedy Labs., Inc., 186 Massachusetts Ave., Cambridge 39, Mass.
TECHNICAL MEASUREMENT CORP., 140–142 State St., New Haven, Conn. ADV. PG. 128
Tektronix, Inc., P. O. Box 831, Portland 7, Ore.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
Trott Electronics Co., 1944 Clinton Ave., N., Rochester 21, N. Y.
Ultrasonic Corp., 640 Memorial Drive, Cambridge 39, Mass.
Walkirt Co., 145 W. Hazel, Inglewood, Calif.
West Coast Electronics Co., 5873 W. Jefferson, Los Angeles 16, Calif.

AMPLIFIERS—r-f

Air Associates, Inc., Teterboro, N. J.
Andersen Laboratories, Inc., 39 Talcott Rd., West Hartford 10, Conn.
Atomlab, Inc., 489 Fifth Ave., New York 17, N. Y.
Barker & Williamson, 235 Fairfield Ave., Upper Darby, Pa.
Bristol Engineering Corp., Lincoln Ave. & Pond St., Bristol 1, Pa.
C.G.S. Laboratories, Inc., 391 Ludlow St., Stamford, Conn.
Cardwell Electronic Productions Corp., Allen D., 97 Whiting St., Plainville, Conn.
Chatham Electronics Corp., Livingston, N. J.
Cossor, Ltd., 301 Windsor St., Halifax, N. S., Canada
Cubic Corp., 2841 Canon St., San Diego 6, Calif.
Daystrom Instrument Co., Archbald, Pa.
Electronic Components, Inc., 55 E. 11th St., Paterson, N. J.
El-Tronics, Inc., 5th & Noble Sts. Philadelphia 23, Pa.
Federal Telephone & Radio Co., A Div. of International Telephone & Telegraph Corp., 100 Kingsland Rd., Clifton, N. J.
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
Hewlett-Packard Co., 395 Page Mill Rd., Palo Alto, Calif.
Hycon Mfg. Co., 2961 E. Colorado St., Pasadena 8, Calif.
Infra Electronic Corp., Roseland, N. J.
Insuline Corp. of America, 186 Granite St., Manchester, N. H.
Interelectronics Corp., 2432 Grand Concourse, New York 58, N. Y.
International Research Associates, 2221 Warwick Ave., Santa Monica, Calif.
Kearfott Co., Inc., 14844 Oxnard St., Van Nuys, Calif.
Kings Electronics Co., 40 Marbledale Rd., Tuckahoe, N. Y.
Laboratory for Electronics, Inc., 75 Pitts St., Boston 14, Mass.
Lavoie Laboratories, Morganville, N. J.
Linear Equipment Labs., Inc., Brightwater Place, Massapequa, N. Y.
Magnavox Co., Components Div., Fort Wayne 4, Ind.
Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.
Millivac Instruments, 444 Second St., Schenectady, N. Y.
Ortho Filter Corp., 198 Albion Ave., Paterson 2, N. J.
Ossian Mfg. Co., Box 151A, Ossian, Ind.
Pacific Division, Bendix Aviation Corp., 11600 Sherman Way, North Hollywood, Calif.
Pentron Corp., 221 E. Cullerton St., Chicago 16, Ill.
Plastics & Electronics Co., 272 Northland Ave., Buffalo 8, N. Y.
Polarad Electronics Corp., 100 Metropolitan Ave., Brooklyn 11, N. Y.
Press Wireless Laboratories, Inc., 25 Prospect Place, West Newton 65, Mass.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
Radio Corporation of America, Engineering Products Div., Camden, N. J.
Radio Sonic Corp., 32 W. 22nd St., New York 10, N. Y.
Resdel Engineering Corp., 2351 Riverside Drive, Los Angeles 39, Calif.
Rosen Engineering Products, Inc., Raymond, 32nd & Walnut Sts., Philadelphia 4, Pa.
Spencer-Kennedy Labs., Inc., 186 Massachusetts Ave., Cambridge 39, Mass.
Standard Winding Corp., 44–62 Johnes St., Newburgh, N. Y.
Technology Instrument Corp., 531 Main St., Acton, Mass.
Telechrome, Inc., 88 Merrick Rd., Amityville, N. Y.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Tel-Instrument Co., 728 Garden St., Carlstadt, N. J.
Thordarson-Meissner Mfg. Divs., Mt. Carmel, Ill.
Ultrasonic Corp., 640 Memorial Drive, Cambridge 39, Mass.
Varian Associates, 611 Hansen Way, Palo Alto, Calif.
Volkers & Schaffer Mfg. Corp., P. O. Box 996, Schenectady, N. Y.
West Coast Electronics Co., 5873 W. Jefferson, Los Angeles 16, Calif.

AMPLIFIERS—Rotating

Bogue Electric Mfg. Co., 52 Iowa Ave., Paterson 3, N. J.
Infra Electronic Corp., Roseland, N. J.
Lavoie Laboratories, Morganville, N. J.
Pentron Corp., 221 E. Cullerton St., Chicago 16, Ill.

AMPLIFIERS—Servo

Ahrendt Instrument Co., 4910 Calvert Rd., College Park, Md.
Air Associates, Inc., Teterboro, N. J.
Arma Corp., Old Country Rd., Garden City, N. Y.
Askania Regulator Co., 240 E. Ontario St., Chicago 11, Ill.
Associated Engineering Corp. of Boston, 65 Kent St., Brookline 46, Mass.
Atlas Engineering Co., 3 Edgewood St., Roxbury, Mass.
Audio Instrument Co., Inc., 133 W. 14th St., New York 11, N. Y.
Automatic Temperature Control Co., Inc., 5206 Pulaski Ave., Philadelphia 44, Pa.
Avion, Inc., 58–15 Northern Blvd., Woodside 17, N. Y.
Avion Instrument Corp., Div. of American Car & Foundry Co., 295 State Highway #17, Paramus, N. J.
Bill Jack Scientific Instrument Co., P. O. Box C–39, Solana Beach, Calif.
Bogue Electric Mfg. Co., 52 Iowa Ave., Paterson 3, N. J.
Cardwell Electronic Productions Corp., Allen D., 97 Whiting St., Plainville, Conn.
Clifford Mfg. Co., Grove St., Waltham, Mass.
Clifton Precision Products Co., Broadway & Marple Ave., Clifton Heights, Pa.
Computing Devices of Canada, Ltd., P. O. Box 508, Ottawa 4, Ontario, Canada
Connecticut Telephone & Electric Corp., 70 Brittania St., Meriden, Conn.
Control Electronics Co., Inc., 1925 New York Ave., Huntington Station, N. Y.
CURTISS-WRIGHT CORP., ELECTRONICS DIV., Carlstadt, N. J. ADV. PG. 31
Dage Electronics Div., Thompson Products, Inc., 69 N. Second St., Beech Grove, Ind.
Dalmo Victor Co., 1414 El Camino Real, San Carlos, Calif.
Daystrom Instrument Co., Archbald, Pa.
Doelcam Corp., 1400 Soldiers Field Rd., Boston 35, Mass.
Eclipse-Pioneer Div., Bendix Aviation Corp., Teterboro, N. J.
Electronic Associates, Inc., Long Branch, N. J.
EL-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
Empire State Laboratories, Inc., 2608 Merrick Rd., Bellmore, N. Y.
Federal Telephone & Radio Co., A Div. of International Telephone & Telegraph Corp., 100 Kingsland Rd., Clifton, N. J.
Fielden Instrument Div., Robertshaw-Fulton Controls Co., 2920 N. 4th St., Philadelphia 33, Pa.
FORD INSTRUMENT CO., DIV. OF SPERRY CORP., 31–10 Thomson Ave., Long Island City, N. Y. ADV. PG. 105
General Magnetics, Inc., 136 Bloomfield Ave., Bloomfield, N. J.
Goodyear Aircraft Corp., 1210 Massillion Rd., Akron 15, Ohio
Hagan Corp., 323 Fourth Ave., Pittsburgh 22, Pa.
Hycon Mfg. Co., 2961 E. Colorado St., Pasadena 8, Calif.
Industrial Control Co., Straight Path & Arlington Ave., Wyandanch, N. Y.
Industrial Test Equipment Co., 55 E. 11th St., New York 3, N. Y.
Infra Electronic Corp., Roseland, N. J.
Ketay Instrument Corp., 555 Broadway, New York 12, N. Y.
Keystone Products Co., 904–6 23rd St., Union City, N. J.
KOLLSMAN INSTRUMENT CORP., 80–08 45th Ave., Elmhurst, N. Y. ADV. PG. 11
L & O Research & Development Corp., 134 N. Wayne Ave., Wayne, Pa.
Lapp Insulator Co., Inc., 31 Gilbert St., LeRoy, N. Y.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 131
Librascope, Inc., 808 Western Ave., Glendale, Calif.
Link Aviation, Inc., Binghamton, N. Y.
Magnavox Co., Components Div., Fort Wayne 4, Ind.
Magnetic Amplifiers, Inc., 632 Tinton Ave., New York 55, N. Y.
Magnetic Research Corp., 200 E. Center St., El Segundo, Calif.
Magnetics Research Co., 142 King St., Chappaqua, N. Y.
Maxson Corp., W. L., 460 W. 34th St., New York 1, N. Y.
Mid-Century Instrumatic Corp., 611 Broadway, New York 12, N. Y.
Midwestern Geophysical Lab., 3400 S. Harvard, Tulsa, Okla.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Back Cover
Muirhead & Co., Ltd., Beckenham, Kent, England
North American Philips Co., Inc., 750 S. Fulton Ave., Mt. Vernon, N. Y.
Northeastern Engineering, Inc., Manchester, N. H.
Ortho Filter Corp., 198 Albion Ave., Paterson 2, N. J.
PSC Applied Research Ltd., 1500 O'Connor Drive, Toronto 16, Ontario, Canada
Pacific Division, Bendix Aviation Corp., 11600 Sherman Way, North Hollywood, Calif.
Pentron Corp., 221 E. Cullerton St., Chicago 16, Ill.
Phebco Inc., 3640 Woodland Ave., Baltimore 15, Md.
Phoenix Precision Instrument Co., 3803–05 N. 5th St., Philadelphia, Pa.
Plastics & Electronics Co., 272 Northland Ave., Buffalo 8, N. Y.
Polytechnic Research & Development Co., Inc., 202 Tillary St., Brooklyn 1, N. Y.
Press Wireless Laboratories, Inc., 25 Prospect Place, West Newton 65, Mass.
Sanders Associates, Inc., Nashua, N. H.

Sangamo Electric Co., Springfield, Ill.
Servo Corp. of America, 2020 Jericho Turnpike, New Hyde Park, N. Y.
Servo-Tek Products Corp., 1086 Goffle Rd., Hawthorne, N. J.
Servomechanisms, Inc., 500 Franklin Ave., Garden City, N. Y.
Servospeed Div., Electro Devices, Inc., 4 Godwin Ave., Paterson 1, N. J.
Standard Electronics Research Corp., 2 East End Ave., New York 21, N. Y.
Thwing-Albert Instrument Co., Penn St. & Pulaski Ave., Philadelphia 44, Pa.
Transicoil Corp., 107 Grand St., New York 13, N. Y.
Ultrasonic Corp., 640 Memorial Drive, Cambridge 39, Mass.
Vectron, Inc., 400 Main St., Waltham, Mass.
Vickers Electric Division, Vickers, Inc., 1840 Locust St., St. Louis 3, Mo.
Walkirt Co., 145 W. Hazel, Inglewood, Calif.
West Coast Electronics Co., 5873 W. Jefferson, Los Angeles 16, Calif.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.

AMPLIFIERS—Wideband

Advance Electronics Co., 451 Highland Ave., Passaic, N. J.
Air Associates, Inc., Teterboro, N. J.
Airmec Ltd., High Wycombe, Buckinghamshire, England
American Electronic Laboratories Inc., 641 Arch St., Philadelphia 6, Pa.
Arenberg Ultrasonic Laboratory, 94 Green St., Jamaica Plain 30, Mass.
ATOMIC INSTRUMENT CO., 84 Massachusetts Ave., Cambridge 39, Mass. ADV. PG. Inside Back Cover
Atomlab, Inc., 489 Fifth Ave., New York 17, N. Y.
Barker & Williamson, 235 Fairfield Ave., Upper Darby, Pa.
British Electronic Sales Co., 23–03 45th Rd., Long Island City 1, N. Y.
Chatham Electronics Corp., Livingston, N. J.
Cossor, Ltd., 301 Windsor St., Halifax, N. S., Canada
Daystrom Instrument Co., Archbald, Pa.
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
EKCO ELECTRONICS LTD., EKCO WORKS, Southend-on-Sea, Essex, England. ADV. PG. 127
Electrical & Physical Instrument Corp., 42–19 27th St., Long Island City 1, N. Y.
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
FURST ELECTRONICS, INC., 3330-A W. Lawrence Ave., Chicago 25, Ill. ADV. PG. 126
Garod Radio Corp., 79 Washington St., Brooklyn 1, N. Y.
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
Hanover Developments, 401 E. 74th St., New York 21, N. Y.
Hathaway Instrument Co., 1315 S. Clarkson St., Denver 10, Colo.
Hewlett-Packard Co., 395 Page Mill Rd., Palo Alto, Calif.
Hycon Mfg. Co., 2961 E. Colorado St., Pasadena 8, Calif.
Industrial Test Equipment Co., 55 E. 11th St., New York 3, N. Y.
Infra Electronic Corp., Roseland, N. J.
Insuline Corp. of America, 186 Granite St., Manchester, N. H.
Interelectronics Corp., 2432 Grand Concourse, New York 58, N. Y.
International Research Associates, 2221 Warwick Ave., Santa Monica, Calif.
Kay-Lab., Inc., 1090 Morena Blvd., San Diego 10, Calif.
Kearfott Co., Inc., 14844 Oxnard St., Van Nuys, Calif.
Lapp Insulator Co., Inc., 31 Gilbert St., LeRoy, N. Y.
Lee Laboratories, Inc., Genesee, Pa.
Linear Equipment Labs., Inc., Brightwater Place, Massapequa, N. Y.
McIntosh Lab., Inc., 320 Water St., Binghamton, N. Y.
Magnavox Co., Components Div., Fort Wayne 4, Ind.
Measurement Engineering Ltd., Arnprior, Ontario, Canada
Miller Instruments, Inc., William, 325 N. Halstead Ave., Pasadena 8, Calif.
New London Instrument Co., P. O. Box 189, New London, Conn.
Ortho Filter Corp., 198 Albion Ave., Paterson 2, N. J.
Ossian Mfg. Co., Box 151A, Ossian, Ind.
Pacific Division, Bendix Aviation Corp., 11600 Sherman Way, North Hollywood, Calif.
Pentron Corp., 221 E. Cullerton St., Chicago 16, Ill.
Phebco Inc., 3640 Woodland Ave., Baltimore 15, Md.
Plastics & Electronics Co., 272 Northland Ave., Buffalo 8, N. Y.
Polarad Electronics Corp., 100 Metropolitan Ave., Brooklyn 11, N. Y.
Press Wireless Laboratories, Inc., 25 Prospect Place, West Newton 65, Mass.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
Radiation Instrument Co., P. O. Box 733, Silver Spring, Md.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
Radio Corporation of America, Engineering Products Div., Camden, N. J.
Radio Sonic Corp., 32 W. 22nd St., New York 10, N. Y.
Resdel Engineering Corp., 2351 Riverside Drive, Los Angeles 39, Calif.
Rosen Engineering Products, Inc., Raymond, 32nd & Walnut St., Philadelphia 4, Pa.
SCIENTIFIC SPECIALTIES CORP., Snow & Union Sts., Brighton 35, Mass. ADV. PG. 138
Scott, Inc., Hermon Hosmer, 385 Putnam Ave., Cambridge, Mass.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Spencer-Kennedy Labs., Inc., 186 Massachusetts Ave., Cambridge 39, Mass.
Standard Electronics Research Corp., 2 East End Ave., New York 21, N. Y.
Stephens Mfg. Corp., 8538 Warner Drive, Culver City, Calif.
TECHNICAL MEASUREMENT CORP., 140–142 State St., New Haven, Conn. ADV. PG. 128
Technology Instrument Corp., 531 Main St., Acton, Mass.
Tektronix, Inc., P. O. Box 831, Portland 7, Ore.
Telechrome, Inc., 88 Merrick Rd., Amityville, N. Y.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Tel-Instrument Co., 728 Garden St., Carlstadt, N. J.
Telonic Industries, 444 S. Rural St., Indianapolis 1, Ind.
Thordarson-Meissner Mfg. Divs., Mt. Carmel, Ill.
Trott Electronics Co., 1944 Clinton Ave., N., Rochester 21, N. Y.
Volkers & Schaffer Mfg. Corp., P. O. Box 996, Schenectady, N. Y.
Waveforms, Inc., 333 Sixth Ave., New York 14, N. Y.
West Coast Electronics Co., 5873 W. Jefferson, Los Angeles 16, Calif.

ANALYZERS—Coincidence and Anticoincidence

ATOMIC INSTRUMENT CO., 84 Massachusetts Ave., Cambridge 39, Mass. ADV. PG. Inside Back Cover
Atomlab, Inc., 489 Fifth Ave., New York 17, N. Y.
BEVA LABORATORY, 1640 Olden Ave., Ext., Trenton 9, N. J. ADV. PG. 116
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
Hycon Mfg. Co., 2961 E. Colorado St., Pasadena 8, Calif.
NUCLEAR SPECIALTY CO., P. O. Box 455, Center Moriches, N. Y. ADV. PG. 134, 138
Phebco Inc., 3640 Woodland Ave., Baltimore 15, Md.
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
Sunshine Scientific Instrument, 180–12 Grant Ave., Philadelphia 15, Pa.
TECHNICAL MEASUREMENT CORP., 140–142 State St., New Haven, Conn. ADV. PG. 128
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23

ANALYZERS—Gas

Applied Physics Corp., 362 W. Colorado Blvd., Pasadena 1, Calif.
Baird Associates, Inc., 33 University Rd., Cambridge 38, Mass.
Baker & Co., Inc., 113 Astor St., Newark 5, N. J.
Beckman, Inc., Arnold O., 1020 Mission St., South Pasadena, Calif.
Burrell Corp., 2233 Fifth Ave., Pittsburgh, Pa.
CAMBRIDGE INSTRUMENT CO., INC., Grand Central Terminal, New York 17, N. Y. ADV. PG. 136
CONSOLIDATED ENGINEERING CORP., 300 N. Sierra Madre Villa, Pasadena 15, Calif. ADV. PG. Inside Front Cover
Davis Emergency Equipment Co., Inc., 252 Halleck St., Newark, N. J.
Daylite Vacuum Products Co., 5207 N. Milwaukee Ave., Chicago 30, Ill.
Engelhard, Inc., Charles, 850 Passaic St., East Newark, N. J.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Hays Corp., Michigan City, Ind.
Jarrell-Ash Co., 26 Farwell St., Newtonville, Mass.
Johnson-Williams, Ltd., 2625 Park Blvd., Palo Alto, Calif.
Kruger Instruments, Harold, Box 164, San Gabriel, Calif.
Larson Instrument Co., 24 Orchard St., Tarrytown, N. Y.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 131
LEIGHTON LABS., H. W., 26 Herman St., Glen Ridge, N. J. ADV. PG. 124
Lindberg Engineering Co., 2450 W. Hubbard St., Chicago 12, Ill.
Liston-Becker Instrument Co., Inc., 649 Hope St., Springdale, Conn.
Manufacturers Engineering & Equipment Corp., York & Mill Rds., Hatboro, Pa.
Mine Safety Appliance Co., Braddock, Thomas & Meade Sts., Pittsburgh 8, Pa.
National Research Corp., 160 Charlemont St., Newton Highlands, Mass.
North American Philips Co., Inc., 750 S. Fulton Ave., Mt. Vernon, N. Y.
Perkin-Elmer Corp., Norwalk, Conn.
Permutit Co., 330 W. 42nd St., New York 36, N. Y.
Process & Instruments, 15 Stone Ave., Brooklyn 33, N. Y.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
Rascher & Betzold, Inc., 730 N. Franklin St., Chicago 10, Ill.
Sargent & Co., E. H., 4647 W. Foster Ave., Chicago 30, Ill.
Scientific Glass Apparatus Co., Inc., 100 Lakewood Terrace, Bloomfield, N. J.
Taller & Cooper Inc., 75 Front St., Brooklyn, N. Y.
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
Victory Engineering Corp., Springfield Rd., Union, N. J.

ANALYZERS—Pulse Height

ATOMIC INSTRUMENT CO., 84 Massachusetts Ave., Cambridge 39, Mass. ADV. PG. Inside Back Cover
Atomlab, Inc., 489 Fifth Ave., New York 17, N. Y.
BEVA LABORATORY, 1640 Olden Ave., Ext., Trenton 9, N. J. ADV. PG. 116
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
DuMont Labs., Inc., Allen B., 760 Bloomfield Ave., Clifton, N. J.
EKCO ELECTRONICS, LTD., ECKO WORKS, Southend-on-Sea, Essex, England. ADV. PG. 127
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
Garod Radio Corp., 79 Washington St., Brooklyn 1, N. Y.
Hycon Mfg. Co., 2961 E. Colorado St., Pasadena 8, Calif.
LEIGHTON LABS., H. W., 26 Herman St., Glen Ridge, N. J. ADV. PG. 124
Nuclear Research Corp., Southampton, Pa.
Polarad Electronics Corp., 100 Metropolitan Ave., Brooklyn 11, N. Y.
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
Radiation Instrument Co., P. O. Box 733, Silver Spring, Md.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
Shallcross Mfg. Co., 10 Jackson Ave., Collingdale, Pa.
TECHNICAL MEASUREMENT CORP., 140–142 State St., New Haven, Conn. ADV. PG. 128
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
Ultrasonic Corp., 640 Memorial Drive, Cambridge 39, Mass.

ANNUNCIATORS

Connecticut Telephone & Electric Corp., 70 Brittania St., Meriden, Conn.
Couch Co., Inc., S. H., North Quincy 71, Mass.
Federal Telephone & Radio Co., A Div. of International Telephone & Telegraph Corp., 100 Kingsland Rd., Clifton, N. J.
Kybernetes Co., 1100 Raymond Blvd., Newark, N. J.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 131
Phaostron Corp., 151 Pasadena Ave., South Pasadena, Calif.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.

APPARATUS—Distilling

Ace Glass, Inc., Vineland, N. J.
American Copper & Brass Works, Inc., Cincinnati 2, Ohio
Amersil Co., Inc., 683 Ramsey Ave., Hillside, N. J.
Babcock & Wilcox Co., 161 E. 42nd St., New York 17, N. Y.
BLICKMAN, INC., S., 7900 Gregory Ave., Weehawken, N. J. ADV. PG. 32
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Daylite Vacuum Products Co., 5207 N. Milwaukee Ave., Chicago 30, Ill.
Fish-Schurman Corp., 70 Portman Rd., New Rochelle, N. Y.

Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Foster Wheeler Corp., 165 Broadway, New York 6, N. Y.
Jasonals Chemical Corp., 825 E. 42nd St., Brooklyn 10, N. Y.
Kontes Glass Co., Spruce St., Vineland, N. J.
Metalab Equipment Corp., 270 Duffy Ave., Hicksville, N. Y.
Milwaukee Glass Works, Inc., 2338 N. 30th St., Milwaukee, Wis.
National Research Corp., 160 Charlemont St., Newton Highlands, Mass.
Sargent & Co., E. H., 4647 W. Foster Ave., Chicago 30, Ill.
Scientific Glass Apparatus Co., Inc., 100 Lakewood Terrace, Bloomfield, N. J.
Wakefield Industries, Inc., 5108 Grove St., Skokie, Ill.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

APPARATUS—Drying (for use on gases)

Ace Glass, Inc., Vineland, N. J.
Bowser Technical Refrigeration Div. of Bowser, Inc., Terryville, Conn.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 106
Daylite Vacuum Products Co., 5207 Milwaukee Ave., Chicago 30, Ill.
Eisler Engineering Co., 730 S. 13th St., Newark 3, N. J.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Kahle Engineering Co., 1307 Seventh St., North Bergen, N. J.
Kahn & Co., Inc., 541 Windsor St., Hartford, Conn.
LENNARD CO., INC., P. M., 671 Bergen St., Brooklyn 38, N. Y. ADV. PG. 26
Pittsburgh Lectrodryer Corp., P. O. Box 1766, Pittsburgh, Pa.
Scientific Glass Apparatus Co., Inc., 100 Lakewood Terrace, Bloomfield, N. J.
Wakefield Industries, Inc., 5108 Grove St., Skokie, Ill.

APPARATUS—Drying, Vacuum

Ace Glass, Inc., Vineland, N. J.
Consolidated Vacuum Corp., 1775 Mt. Read Blvd., Rochester 3, N. Y.
Daylite Vacuum Products Co., 5207 N. Milwaukee Ave., Chicago 30, Ill.
Fredericks Co., George E., Bethayres, Pa.
High Vacuum Equipment Corp., 349 Lincoln St., Hingham, Mass.
Kahle Engineering Co., 1307 Seventh St., North Bergen, N. J.
International Pump & Machine Works, 11–13 Governor St., Newark 2, N. J.
Kontes Glass Co., Spruce St., Vineland, N. J.
LENNARD CO., INC., P. M., 671 Bergen St., Brooklyn 38, N. Y. ADV. PG. 26
National Research Corp., 160 Charlemont St., Newton Highlands, Mass.
Scientific Glass Apparatus Co., Inc., 100 Lakewood Terrace, Bloomfield, N. J.
SCIENTIFIC SPECIALTIES CORP., Snow & Union Sts., Brighton 35, Mass. ADV. PG. 138
Steiner-Ives Co., Springfield Rd., Union, N. J.
STOKES MACHINE CO., F. J., 5500 Tabor Rd., Philadelphia 20, Pa. ADV. PG. 24
Wakefield Industries, Inc., 5108 Grove St., Skokie, Ill.

APPARATUS—Filter Micro

BLICKMAN, INC., S., 7900 Gregory Ave., Weehawken, N. J. ADV. PG. 32
Daylite Vacuum Products Co., 5207 N. Milwaukee Ave., Chicago 30, Ill.
Fish-Schurman Corp., 70 Portman Rd., New Rochelle, N. Y.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Kontes Glass Co., Spruce St., Vineland, N. J.
LENNARD CO., INC., P. M., 671 Bergen St., Brooklyn 38, N. Y. ADV. PG. 26
Sargent & Co., E. H., 4647 W. Foster Ave., Chicago 30, Ill.
Scientific Glass Apparatus Co., Inc., 100 Lakewood Terrace, Bloomfield, N. J.
Wakefield Industries, Inc., 5108 Grove St., Skokie, Ill.

APPARATUS—Laboratory, Glass

Ace Glass, Inc., Vineland, N. J.
Atomlab, Inc., 489 Fifth Ave., New York 17, N. Y.
Burrell Corp., 2233 Fifth Ave., Pittsburgh, Pa.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Consolidated Vacuum Corp., 1775 Mt. Read Blvd., Rochester 3, N. Y.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 106
Daylite Vacuum Products Co., 5207 N. Milwaukee Ave., Chicago 30, Ill.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Fish-Schurman Corp., 70 Portman Rd., New Rochelle, N. Y.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Fredericks Co., George E., Bethayres, Pa.
Glass Engineering Laboratories, Belmont, Calif.
Greiner Co., Emil, 26 N. Moore St., New York 13, N. Y.
Isotope Accessories Co., Box 5458, Philadelphia 43, Pa.
Jasonals Chemical Corp., 825 E. 42nd St., Brooklyn 10, N. Y.
Kahl Scientific Instrument Corp., P. O. Box 1166, El Cajon, Calif.
Kahle Engineering Co., 1307 Seventh St., North Bergen, N. J.
Kontes Glass Co., Spruce St., Vineland, N. J.
Laboratory Equipment Corp., St. Joseph, Mich.
LERMAC INC., 5303 Adeline St., Oakland, Calif. ADV. PG. 114
Milwaukee Glass Works, Inc., 2338 N. 30th St., Milwaukee, Wis.
Phoenix Precision Instrument Co., 3803–05 N. 5th St., Philadelphia, Pa.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
Sargent & Co., E. H., 4647 W. Foster Ave., Chicago 30, Ill.
Scientific Glass Apparatus Co., Inc., 100 Lakewood Terrace, Bloomfield, N. J.
Special Glass Paducts Co., 10 W. 33rd St., New York 1, N. Y.
Vacuum Tube Products, 506 S. Cleveland St., Oceanside, Calif.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

APPARATUS, LABORATORY—Metal

BURKE & JAMES, INC., 321 S. Wabash, Chicago, Ill. ADV. PG. 138
Metal Products Corp., 48 W. 19th St., Weehawken, N. J.

APPARATUS—Laboratory, Platinum

Ace Glass, Inc., Vineland, N. J.
American Platinum Works, N.J.R.R. Ave. at Oliver St., Newark, N. J.
Baker & Co., Inc., 113 Astor St., Newark 5, N. J.
Bishop & Co., J., Malvern, Pa.
Daylite Vacuum Products Co., 5207 N. Milwaukee Ave., Chicago 30, Ill.
Engelhard, Inc., Charles, 850 Passaic St., East Newark, N. J.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.

APPARATUS—Laboratory, Porcelain

Burrell Corp., 2233 Fifth Ave., Pittsburgh, Pa.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Fish-Schurman Corp., 70 Portman Rd., New Rochelle, N. Y.
Hommel Co., O., 209–213 Fourth Ave., Pittsburgh, Pa.
Laboratory Equipment Corp., St. Joseph, Mich.
U. S. Stoneware Co., Akron 9, Ohio

APPARATUS—Micro-Drying

Ace Glass, Inc., Vineland, N. J.
Daylite Vacuum Products Co., 5207 N. Milwaukee Ave., Chicago 30, Ill.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Laboratory Equipment Corp., St. Joseph, Mich.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
Sargent & Co., E. H., 4647 Foster Ave., Chicago 30, Ill.
Scientific Glass Apparatus Co., Inc., 100 Lakewood Terrace, Bloomfield, N. J.
Wakefield Industries, Inc., 5108 Grove St., Skokie, Ill.

APRONS

See also CLOTHING, Protective

Armstrong Cork Co., 1010 Concord St., Lancaster, Pa.
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 10
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Mine Safety Appliances Co., Braddock, Thomas & Meade Sts., Pittsburgh 8, Pa.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.

ASBESTOS—Filtering

See FILTERS—Asbestos

ASHING DISHES

Ace Glass, Inc., Vineland, N. J.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 106
Fish-Schurman Corp., 70 Portman Rd., New Rochelle, N. Y.
Laboratory Equipment Corp., St. Joseph, Mich.
Western Gold & Platinum Works, 589 Bryant St., San Francisco, Calif.

ASPIRATOR UNITS

Ace Glass, Inc., Vineland, N. J.
Kahle Engineering Co., 1307 Seventh St., North Bergen, N. J.
Phillips-Drucker, 2245 S. Vandeventer Ave., St. Louis, Mo.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
Sargent & Co., E. H., 4647 W. Foster Ave., Chicago 30, Ill.
Scientific Glass Apparatus Co., Inc., 100 Lakewood Terrace, Bloomfield, N. J.

ATOMIZING EQUIPMENT

Ace Glass, Inc., Vineland, N. J.
DeVilbiss Co., 300 Phillips Ave., Toledo, Ohio
LERMAC, INC., 5303 Adeline St., Oakland, Calif. ADV. PG. 114
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
Wakefield Industries, Inc., 5108 Grove St., Skokie, Ill.

AUTOCLAVES

Aetna Scientific Co., Second & Spring Sts., Everett 49, Mass.
American Instrument Co., Inc., 8030 Georgia Ave., Silver Springs, Md.
Babcock & Wilcox Co., 161 E. 42nd St., New York 17, N. Y.
Barnstead Still & Sterilizer Co., 222 Lanesville Terrace, Boston 31, Mass.
BLICKMAN, INC., S., 7900 Gregory Ave., Weehawken, N. J. ADV. PG. 32
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Emerson-Sack Warner Corp., 150 Dorchester Ave., South Boston, Mass.
Glas-Col Apparatus Co., Inc., 711 Hulman St., Terre Haute, Ind.
Knapp Mills, Inc., 23–15 Borden Ave., Long Island City 1, N. Y.
Leader Iron Works, Inc., 2110 N. Jasper, Decatur, Ill.
LENNARD CO., INC., P. M., 671 Bergen St., Brooklyn 38, N. Y. ADV. PG. 26
Pelton & Crane Co., 632 Harper Ave., Detroit, Mich.
Pfaudler Co., 1002 West Ave., Rochester, N. Y.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Struthers-Wells Corp., Warren, Pa.

BADGES—Film

See DOSIMETERS—Film Badge

BALANCES

See also SCALES

BALANCES—Analytical

Ace Glass, Inc., Vineland, N. J.
Burrell Corp., 2233 Fifth Ave., Pittsburgh, Pa.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
LaRoe Instruments, Inc., Box 5906, Bethesda 14, Md.
Ultrasonic Corp., 640 Memorial Drive, Cambridge, 39, Mass.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

BALANCES—Heavy Duty

Burrell Corp., 2223 Fifth Ave., Pittsburgh, Pa.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Fairbanks Morse & Co., 600 S. Michigan Ave., Chicago 5, Ill.
Ohaus Scale Corp., 1050 Commerce Ave., Union, N. J.
WELCH SCIENTIFIC CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148

BALANCES—Microchemical

Ace Glass, Inc., Vineland, N. J.
Burrell Corp., 2233 Fifth Ave., Pittsburgh, Pa.

Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Roller-Smith Corp., 1825 W. Market, Bethlehem, Pa.

BALANCES—Scale, Analytical

Burrell Corp., 2233 Fifth Ave., Pittsburgh, Pa.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

BALANCES—Semi-Micro

Burrell Corp., 2233 Fifth Ave., Pittsburgh, Pa.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Eberbach Corp., Ann Arbor, Mich.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Roller-Smith Corp., 1825 W. Market, Bethlehem, Pa.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

BALANCES—Spring

Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
WELCH SCIENTIFIC CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148

BALANCES—Torsion

Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Ohaus Scale Corp., 1050 Commerce Ave., Union, N. J.
Roller-Smith Corp., 1825 W. Market, Bethlehem, Pa.
Yonkers, Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

BALL MILLS

Abbe Engineering Co., 50 Church St., New York 7, N. Y.
Babcock & Wilcox Co., 161 E. 42nd St., New York 17, N. Y.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Eisler Engineering Co., 760 S. 13th St., Newark 3, N. J.
Fish-Schurman Corp., 70 Portman Rd., New Rochelle, N. Y.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Foster Wheeler Corp., 165 Broadway, New York 6, N. Y.
Hommel Co., O., 209–213 Fourth Ave., Pittsburgh, Pa.
U. S. Stoneware Co., Akron 9, Ohio
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

BALLOONS

GENERAL MILLS, INC., MECHANICAL DIV., 1620 Central Ave., N. E., Minneapolis, Minn. ADV. PG. 101
Molded Latex Products, Inc., 27 Kentucky Ave., Paterson 3, N. J.
Scientific Glass Apparatus Co., Inc., 100 Lakewood Terrace, Bloomfield, N. J.

BAROMETERS

Bristol Co., Waterbury 20, Conn.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Eberbach Corp., Ann Arbor, Mich.
Edmund Scientific Co., 502 E. Gloucester Pike, Barrington, N. J.
GENERAL MILLS, INC., MECHANICAL DIV., 1620 Central Ave., N. E., Minneapolis, Minn. ADV. PG. 101
Laboratory Equipment Corp., St. Joseph, Mich.
Moeller Instrument Co., 132nd St., at 89th Ave., Richmond Hill 18, N. Y.
Northeastern Engineering, Inc., Manchester, N. H.
Sargent & Co., E. H., 4647 W. Foster Ave., Chicago 30, Ill.
Taylor Instrument Companies, 95 Ames St., Rochester, N. Y.
Trimount Instrument Co., 3119 W. Lake St., Chicago 12, Ill.
Wallace & Tiernan, Inc., Belleville 9, N. J.
WELCH SCIENTIFIC CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148

BATHS—Constant Temperature

Aloe Scientific Div., A. S. Aloe Co., 5655 Kingsbury Blvd., St. Louis 12, Mo.
American Instrument Co., Inc., 8030 Georgia Ave., Silver Springs, Md.
American Research Corp., 11 Brook St., Bristol, Conn.
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 10
Barnstead Still & Sterilizer Co., 222 Lanesville Terrace, Boston 31, Mass.
Bowser Technical Refrigeration Div. of Bowser, Inc., Terryville, Conn.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Daylite Vacuum Products Co., 5207 N. Milwaukee Ave., Chicago 30, Ill.
Emerson-Sack Warner Corp., 150 Dorchester Ave., South Boston, Mass.
Fish-Schurman Corp., 70 Portman Rd., New Rochelle, N. Y.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Laboratory Equipment Corp., St. Joseph, Mich.
LERMAC, INC., 5303 Adeline St., Oakland, Calif. ADV. PG. 114
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Process & Instruments, 15 Stone Ave., Brooklyn 33, N. Y.
Sargent & Co., E. H., 4647 W. Foster Ave., Chicago 30, Ill.
Standard Cabinet Co., 52 Washington Ave., Carlstadt, N. J.
Standard Electronics Research Corp., 2 East End Ave., New York 21, N. Y.
Victory Engineering Corp., Springfield Rd., Union, N. J.
Wilkens-Anderson Co., 4525 W. Division St., Chicago 51, Ill.

BATTERIES—Dry Cell

Air Associates, Inc., Teterboro, N. J.
Bright Star Industries, 600 Getty Ave., Clifton, N. J.
Burgess Battery Co., Battery Div., Freeport, Ill.
Burndept Ltd., West St., Erith, Kent, United Kingdom
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
Interelectronics Corp., 2432 Grand Concourse, New York 58, N. Y.
Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.
National Carbon Co., A Division of Union Carbide & Carbon Corp., 30 E. 42nd St., New York 17, N. Y.
RADIO CORPORATION OF AMERICA, TUBE DIV., Harrison, N. J. ADV. PG. 19
Ray-O-Vac Co., Madison, Wisconsin
Specialty Battery Co., Madison 4, Wisconsin

BATTERIES—Nuclear

Ohmart Corp., 2236 Bogen St., P. O. Box 67, Sta. B, Cincinnati 22, Ohio
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
U. S. RADIUM CORP., 535 Pearl St., New York 7, N. Y. ADV. PG. 108

BATTERIES—Wet Cell

Air Associates, Inc., Teterboro, N. J.
American Machine & Foundry Co., Contract Div., 261 Madison Ave., New York 16, N. Y.
Electric Auto-Lite Co., Instrument & Gauge Div., Toledo 1, Ohio
Interelectronics Corp., 2432 Grand Concourse, New York 58, N. Y.
Yardney Electric Corp., 40 Leonard St., New York 13, N. Y.

BEARINGS—Miniature

Graphite Metallizing Corp., 1043 Nepperhan Ave., Yonkers, N. Y.
Interelectronics Corp., 2432 Grand Concourse, New York 58, N. Y.
Landis & Gyr, Inc., 45 W. 45th St., New York 36, N. Y.
Miniature Precision Bearings, Inc., Keene, N. H.
U. S. GASKET CO., FLUOROCARBON PRODUCTS, INC., DIV., 600 N. 10th St., Camden 1, N. J. ADV. PG. 149

BELLOWS

Breeze Corporations, Inc., 700 Liberty Ave., Union N. J.
Bristol Co., Waterbury 20, Conn.
Clifford Mfg. Co., Grove St., Waltham, Mass.
Crane Packing Co., 1800 Cuyler Ave., Chicago, Ill.
Flexonics Corp., 1315 S. Third Ave., Maywood, Ill.
Fulton Sylphon Division, Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Minor Rubber Co., 49 Ackerman St., Bloomfield, N. J.
SOLAR AIRCRAFT CO., 2200 Pacific Highway, San Diego 12, Calif. ADV. PG. 28
Titeflex, Inc., 500 Frelinghuysen Ave., Newark 5, N. J.
U. S. GASKET CO., FLUOROCARBON PRODUCTS, INC., DIV., 600 N. 10th St., Camden 1, N. J. ADV. PG. 149
Zallea Brothers, 800 Locust St., Wilmington, Del.

BENCHES

Alden Systems Co., Alden Research Center, Westboro, Mass.
Baker Co., Inc., The, Maplewood, Maine
Bristol Engineering Corp., Lincoln Ave. & Pond St., Bristol 1, Pa.
Doehler Metal Furniture Co., Inc., 194 Lexington Ave., New York, N. Y.
Emerson-Sack Warner Corp., 150 Dorchester Ave., South Boston 27, Mass.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Gaertner Scientific Corp., 1237 Wrightwood Ave., Chicago, Ill.
Hamilton Mfg. Co., Two Rivers, Wis.
Kewaunee Mfg. Co., 5083 S. Center St., Adrian, Mich.
Lyon Metal Products, Inc., 10 Montgomery St., Aurora, Ill.
RAY-PROOF CORP., 513 W. 54th St., New York, N. Y. ADV. PG. 22

BETA-RAY SOURCES

See **ISOTOPES—Radioactive**

BI-METALS—Thermostatic

American Silver Co., 36–07 Prince St., Flushing, N. Y.
Baker & Co., Inc., 113 Astor St., Newark 5, N. J.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Metals & Controls Corp., General Plate Div., Spencer Thermostat Div., Attleboro, Mass.
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., S., Minneapolis, Minn.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.

BLENDERS—Laboratory

Ace Glass, Inc., Vineland, N. J.
Brookfield Engineering Labs., Inc., Porter St., Stoughton, Mass.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Consolidated Siphon Supply Co., Inc., 24 Wooster St., New York, N. Y.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
International Engineering, Inc., 1200 Bolander Ave., Dayton, Ohio
Sorvall, Inc., Ivan, P. O. Box 230, Pearl St., Norwalk, Conn.
U. S. Stoneware Co., Akron 9, Ohio

BLOWERS—Laboratory

American Electric Motors, Inc., 4811 Telegraph Rd., Los Angeles 22, Calif.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Century Fan & Ventilator Co., 25 Cedar St., Stamford, Conn.
Clarage Fan Co., 710 Porter St., Kalamazoo, Mich.
Eastern Air Devices, Inc., 385 Central Ave., Dover, N. H.
Eberbach Corp., Ann Arbor, Mich.
Eisler Engineering Co., 760 S. 13th St., Newark 3, N. J.
Electric Blower Co., 352 Atlantic Ave., Boston 10, Mass.
Electrovent Fan & Mfg. Co., 812 W. Lake St., Chicago 7, Ill.
Emerson-Sack Warner Corp., 150 Dorchester Ave., South Boston 27, Mass.
Hamilton Mfg. Co., Two Rivers, Wis.
Heinze Electric Co., 685 Lawrence St., Lowell, Mass.
Ilg Electric Ventilating Co., 2850 N. Crawford Ave., Chicago 41, Ill.
Infra Electronic Corp., Roseland, N. J.
Kahle Engineering Co., 1307 Seventh St., North Bergen, N. J.
LENNARD CO., INC., P. M., 671 Bergen St., Brooklyn 38, N. Y. ADV. PG. 26
Metalab Equipment Corp., 270 Duffy Ave., Hicksville, N. Y.
Mission-Western Engineers, Inc., 132 W. Colorado, Pasadena 1, Calif.
Redmond Co., Inc., Owosso, Mich.
Rotron Mfg. Co., 7 Schoonmaker Lane, Woodstock, N. Y.
Small Motors, Inc., 2076 Elston Ave., Chicago 14, Ill.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Trane Company, The, LaCrosse, Wis.
United States Air Conditioning Corp., Como Ave., SE at 33rd, Minneapolis 14, Minn.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.

BORON

Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.

Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.

BOTTLES

See CONTAINERS

BOXES—Dry

Accurate Sheet Metal & Mfg. Works, 2336–38 Milwaukee Ave., Chicago 47, Ill.
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 10
BLICKMAN, INC., S., 7900 Gregory Ave., Weehawken, N. J. ADV. PG. 32
Durlach Can & Iron Works, 168 7th, Brooklyn, N. Y.
Emerson-Sack-Warner Corp., 150 Dorchester Ave., South Boston 27, Mass.
Kewaunee Mfg. Co., 5083 S. Center St., Adrian, Mich.
La Roe Instruments, Inc., Box 5906, Bethesda 14, Md.
LENNARD CO., INC., P. M., 671 Bergen St., Brooklyn 38, N. Y. ADV. PG. 26
LERMAC, INC., 5303 Adeline St., Oakland, Calif. ADV. PG. 114
Metalab Equipment Corp., 270 Duffy Ave., Hicksville, N. Y.
National Research Corp., 160 Charlemont St., Newton Highlands, Mass.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.

BOXES—Glove

See also HOODS

BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 10
BLICKMAN, INC., S., 7900 Gregory Ave., Weehawken, N. J. ADV. PG. 32
Emerson-Sack Warner Corp., 150 Dorchester Ave., South Boston, Mass.
Kewaunee Mfg. Co., 5083 S. Center St., Adrian, Mich.
LENNARD CO., INC., P. M., 671 Bergen St., Brooklyn 38, N. Y. ADV. PG. 26
LERMAC, INC., 5303 Adeline St., Oakland, Calif. ADV. PG. 114
Metalab Equipment Corp., 270 Duffy Ave., Hicksville, N. Y.
National Vulcanized Fibre Co., Wilmington 99, Del.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143

BRACKETS

Emerson-Sack-Warner Corp., 150 Dorchester Ave., South Boston 27, Mass.
Henry & Miller Industries, 45 Rockefeller Plaza, New York 20, N. Y.
Lee Electronic Labs., Inc., 233 Dudley St., Roxbury 19, Mass.

BREAKERS

See PULVERIZERS

BRICK—Acid Resisting

Acme Brick Co., P. O. Box 425, Fort Worth 1, Texas
Atlas Mineral Products Co., 131 Norman St., Mertzman, Pa.
Babcock & Wilcox Co., 161 E. 42nd St., New York 17, N. Y.
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
Division Lead Co., 7742 W. 61st Place, Summit, Ill.
Johns-Manville, 22 E. 40th St., New York 16, N. Y.
Knapp Mills, Inc., 23–15 Borden Ave., Long Island City 1, N. Y.
Knight, Maurice A., 171 Kelly Ave., Akron, Ohio
Kraftile Co., Niles, Calif.
Sauereisen Cements Co., Sauereisen Bldg., Pittsburgh 15, Pa.
United Materials & Richmond Brick Co., Ltd., Pt. Richmond, Calif.
U. S. Stoneware Co., Akron 9, Ohio

BRICK—Radiation Shielding

See SHIELDING—Radiation

BRIDGES—Conductivity

Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
CLEGG LABORATORIES, INC., 142 S. Livingston Ave., Livingston, N. J. ADV. PG. 110
Davis Emergency Equipment Co., Inc., 252 Halleck St., Newark, N. J.
Electrodyne Co., Endicott St., Norwood, Mass.
Engelhard, Inc., Charles, 850 Passaic St., East Newark, N. J.
Fielden Instrument Div., Robertshaw-Fulton Controls Co., 2920 N. 4th St., Philadelphia 33, Pa.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Hellige, Inc. 877 Stewart Ave., Long Island City 1, N. Y.
Industrial Instruments, Inc., 89 Commerce Rd., Cedar Grove, N. J.
Infra Electronic Corp., Roseland, N. J.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 131
Measurement Engineering Ltd., Arnprior, Ontario, Canada
Rubicon Co., Ridge Ave. at 35th St., Philadelphia 32, Pa.
Thwing-Albert Instrument Co., Penn St. & Pulaski Ave., Philadelphia 44, Pa.

BRIDGES—Electrical

Allegany Instrument Co., Inc., Cumberland, Md.
Barnes Development Co., 213 W. Baltimore Pike, Lansdowne, Pa.
Bristol Co., Waterbury 20, Conn.
CAMBRIDGE INSTRUMENT CO., INC., Grand Central Terminal, New York 17, N. Y. ADV. PG. 136
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Cinema-Television Ltd., Worsley Bridge Rd., London, S. E. 26, England
CLEGG LABORATORIES, INC., 142 S. Livingston Ave., Livingston, N. J. ADV. PG. 110
Eastern Precision Resistor Corp., 130–11 90th Ave., Richmond Hill, N. Y.
Electro Measurements, Inc., 4312 S. E. Stark St., Portland 15, Ore.
Electrodyne Co., Endicott St., Norwood, Mass.
Elm Laboratories, 18 South Broadway, Dobbs Ferry, N. Y.
Engelhard, Inc., Charles, 850 Passaic St., East Newark, N. J.
Freed Transformer Co., Inc., 1736 Weirfield St., Brooklyn 27, N. Y.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
Gulton Mfg. Corp., 212 Durham Ave., Metuchen, N. J.
Hewlett-Packard Co., 395 Page Mill Rd., Palo Alto, Calif.
Industrial Instruments, Inc., 89 Commerce Rd., Cedar Grove, N. J.
Industrial Test Equipment Co., 55 E. 11th St., New York 3, N. Y.
Industrial Transformer Corp., Gouldsboro, Pa.
Infra Electronic Corp., Roseland, N. J.
Kahn & Co., Inc., 541 Windsor St., Hartford, Conn.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 131
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Marconi Instruments Ltd., 23 Beaver St., New York 4, N. Y.
McShan Development Corp., 71 Murray St., New York 7, N. Y.
Measurement Engineering Ltd., Arnprior, Ontario, Canada
Miller Instruments, Inc., William, 325 N. Halstead Ave., Pasadena 8, Calif.
Muirhead & Co., Ltd., Beckenham, Kent, England
Phaostron Corp., 151 Pasadena Ave., South Pasadena, Calif.
Radio Sonic Corp., 32 W. 22nd St., New York 10, N. Y.
Rubicon Co., Ridge Ave. at 35th St., Philadelphia 32, Pa.
SCIENTIFIC SPECIALTIES CORP., Snow & Union Sts., Brighton 35, Mass. ADV. PG. 138
Shallcross Mfg. Co., 10 Jackson Ave., Collingdale, Pa.
Sticht Co., Inc., Herman H., 27 Park Place, New York 7, N. Y.
Tech Laboratories, Inc., Bergen & Edsall Blvds., Palisades Park, N. J.
Wayne-Kerr Laboratories, Ltd., New Malden, Surrey, England
Western Sound & Electric Labs., Inc., 805 S. Fifth St., Milwaukee 4, Wis.
Winslow Co., Inc., 9 Liberty St., Newark, N. J.

BRIDGES—Temperature

Allegany Instrument Co., Inc., Cumberland, Md.
Bristol Co., Waterbury 20, Conn.
CAMBRIDGE INSTRUMENT CO., INC., Grand Central Terminal, New York 17, N. Y. ADV. PG. 136
Clifford Mfg. Co., Grove St., Waltham, Mass.
Eastern Precision Resistor Corp., 130–11 90th Ave., Richmond Hill, N. Y.
Electrodyne Co., Endicott St., Norwood, Mass.
Eppley Co., Newport, R. I.
Federal Telephone & Radio Co., A Div. of International Telephone & Telegraph Corp., 100 Kingsland Rd., Clifton, N. J.
Fielden Instrument Div., Robertshaw-Fulton Controls Co., 2920 N. 4th St., Philadelphia 33, Pa.
Industrial Instruments, Inc., 89 Commerce Rd., Cedar Grove, N. J.
Infra Electronic Corp., Roseland, N. J.
Kahl Scientific Instrument Corp., P. O. Box 1166, El Cajon, Calif.
Kearfott Co., Inc., 14844 Oxnard St., Van Nuys, Calif.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 131
Rubicon Co., Ridge Ave. at 35th St., Philadelphia 32, Pa.
Tech Laboratories, Inc., Bergen & Edsall Blvds., Palisades Park, N. J.
Telectro Industries Corp., 35–16 37th St., Long Island City, N. Y.
Thwing-Albert Instrument Co., Penn St. & Pulaski Ave., Philadelphia 44, Pa.
Winslow Co., Inc., 9 Liberty St., Newark, N. J.

BRIDGES—Wheatstone

Allegany Instrument Co., Inc., Cumberland, Md.
Baldwin Instrument Co., Ltd., Brooklands Works, Dartford, Kent, England
Barnes Development Co., 213 W. Baltimore Pike, Lansdowne, Pa.
CAMBRIDGE INSTRUMENT CO., INC., Grand Central Terminal, New York 17, N. Y. ADV. PG. 136
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
CLEGG LABORATORIES, INC., 142 S. Livingston Ave., Livingston, N. J. ADV. PG. 110
Computing Devices of Canada, Ltd., P. O. Box 508, Ottawa 4, Ontario, Canada
Davis Emergency Equipment Co., Inc., 252 Halleck St., Newark, N. J.
Eastern Precision Resistor Corp., 130–11 90th Ave., Richmond Hill, N. Y.
Electrodyne Co., Endicott St., Norwood, Mass.
Eppley Co., Newport, R. I.
Fielden Instrument Div., Robertshaw-Fulton Controls Co., 2920 N. 4th St., Philadelphia 33, Pa.
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
Heath Co., Benton Harbor, Mich.
Industrial Electronics, Inc., 8060 Wheeler St., Detroit 10, Mich.
Industrial Instruments, Inc., 89 Commerce Rd., Cedar Grove, N. J.
Industrial Test Equipment Co., 55 E. 11th St., New York 3, N. Y.
Kahn & Co., Inc., 541 Windsor St., Hartford, Conn.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 131
Marconi Instruments Ltd., 23 Beaver St., New York 4, N. Y.
Measurement Engineering Ltd., Arnprior, Ontario, Canada
Muirhead & Co., Ltd., Beckenham, Kent, England
Phaostron Corp., 151 Pasadena Ave., South Pasadena, Calif.
Rubicon Co., Ridge Ave. at 35th St., Philadelphia 32, Pa.
SCIENTIFIC SPECIALTIES CORP., Snow & Union Sts., Brighton 35, Mass. ADV. PG. 138
Sensitive Research Instrument Corp., 9 Elm Ave., Mt. Vernon, N. Y.
Shallcross Mfg. Co., 10 Jackson Ave., Collingdale, Pa.
Special Instruments Laboratory, Inc., 1003 Highland Ave., Knoxville, Tenn.
Sticht Co., Inc., Herman H., 27 Park Place, New York 7, N. Y.
Tech Laboratories, Inc., Bergen & Edsall Blvds., Palisades Park, N. J.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Thwing-Albert Instrument Co., Penn St. & Pulaski Ave., Philadelphia 44, Pa.
WELCH SCIENTIFIC CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148
Western Sound & Electric Labs., Inc., 805 S. Fifth St., Milwaukee 4, Wis.
Winslow Co., Inc., 9 Liberty St., Newark, N. J.

BRIQUETTING PRESS

Carver, Inc., Fred S., 1 Chatham Rd., Summit, N. J.
SCIENTIFIC SPECIALTIES CORP., Snow & Union Sts., Brighton 35, Mass. ADV. PG. 138
STOKES MACHINE CO., F. J., 5500 Tabor Rd., Philadelphia 20, Pa. ADV. PG. 24

BUBBLE TRAYS

See SCRUBBERS—Gas

BURETTES

See APPARATUS, LABORATORY—Glass

BURETTES—Automatic

See also APPARATUS, LABORATORY, Glass

Ace Glass, Inc., Vineland, N. J.
Aloe Scientific Div., A. S. Aloe Co., 5655 Kingsbury Blvd., St. Louis 12, Mo.
Daylite Vacuum Products Co., 5207 N. Milwaukee Ave., Chicago 30, Ill.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Greiner Co., Emil, 26 N. Moore St., New York 13, N. Y.

Heilige, Inc., 877 Stewart Ave., Long Island City 1, N. Y.
Isotope Accessories Co., Box 5458, Philadelphia 43, Pa.
Kahl Scientific Instrument Corp., P. O. Box 1166, El Cajon, Calif.
Rascher & Betzold, Inc., 730 N. Franklin St., Chicago 10, Ill.
Sargent & Co., E. H., 4647 W. Foster Ave., Chicago 30, Ill.
Scientific Glass Apparatus Co., Inc., 100 Lakewood Terrace, Bloomfield, N. J.
Special Glass Products Co., 10 W. 33rd St., New York 1, N. Y.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

BURNERS—Blast

American Gas Furnace Co., 130 Spring St., Elizabeth, N. J.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Eclipse Fuel Engineering Co., 1100 Buchanan, Rockford, Ill.
Eisler Engineering Co., 760 S. 13th St., Newark 3, N. J.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Kahle Engineering Co., 1307 Seventh St., North Bergen, N. J.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Sargent & Co., E. H., 4647 W. Foster Ave., Chicago 30, Ill.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

BURNERS—Cross-Fire

American Gas Furnace Co., 130 Spring St., Elizabeth, N. J.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Daylite Vacuum Products Co., 5207 N. Milwaukee Ave., Chicago 30, Ill.
Eisler Engineering Co., 760 S. 13th St., Newark 3, N. J.
Kahle Engineering Co., 1307 Seventh St., North Bergen, N. J.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Sargent & Co., E. H., 4647 W. Foster Ave., Chicago 30, Ill.

BURNERS—Gas Hot Plate

Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

BURNERS—Laboratory

American Gas Furnace Co., 130 Spring St., Elizabeth, N. J.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Cooper-Hewitt Electric Co., 721 Grand St., Hoboken, N. J.
Eisler Engineering Co., 760 S. 13th St., Newark 3, N. J.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Jasonals Chemical Corp., 825 E. 42nd St., Brooklyn 10, N. Y.
Kahle Engineering Co., 1307 Seventh St., North Bergen, N. J.
Linde Air Products Co., Div. of Union Carbide & Carbon Corp., 30 E. 42nd St., New York 17, N. Y.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Sargent & Co., E. H., 4647 W. Foster Ave., Chicago 30, Ill.
WELCH SCIENTIFIC CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

BURNERS—Micro

Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Daylite Vacuum Products Co., 5207 N. Milwaukee Ave., Chicago 30, Ill.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Kahle Engineering Co., 1307 Seventh St., North Bergen, N. J.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
Sargent & Co., E. H., 4647 W. Foster Ave., Chicago 30, Ill.
Wakefield Industries, Inc., 5108 Grove St., Skokie, Ill.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

BURNERS—Quartz

Amersil Co., Inc., 683 Ramsey Ave., Hillside, N. J.
Cooper-Hewitt Electric Co., 721 Grand St., Hoboken, N. J.
Daylite Vacuum Products Co., 5207 N. Milwaukee Ave., Chicago 30, Ill.
Eisler Engineering Co., 760 S. 13th St., Newark 3, N. J.
Hanovia Chemical & Mfg. Co., 233 N. J. R. R. Ave., Newark 5, N. J.
Kahle Engineering Co., 1307 Seventh St., North Bergen, N. J.
Menlo Research Laboratory, Menlo Park, Calif.
Scientific Electronic Labs., Inc., 866 Bergen St., Newark 8, N. J.

BUSHINGS—Hermetically Sealed

American Lava Corp., Chattanooga 5, Tenn.
Bennett Products Mfg. Co., Box 1055, Palo Alto, Calif.
Centralab Div. of Globe-Union, Inc., 900 E. Keefe Ave., Milwaukee 1, Wis.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 106
Daylite Vacuum Products Co., 5207 N. Milwaukee Ave., Chicago 30, Ill.
Electrical Industries Div. of Amperex Electronic Corp., 44 Summer Ave., Newark 4, N. J.
Electronic Mechanics, Inc., 101 Clifton Blvd., Clifton, N. J.
Fish-Schurman Corp., 70 Portman Rd., New Rochelle, N. Y.
Garde Mfg. Co., 588 Eddy St., Providence 3, R. I.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Heldor Mfg. Corp., 238 Lewis Ave., Paterson, N. J.
Hermaseal Co., Inc., Riverside Drive, Elkhart, Ind.
Hermetic Seal Products Co., 29–37 S. 6th St., Newark 7, N. J.
Isolantite Mfg. Corp., Stirling, N. J.
McCormick-Selph Associates, Box-6, Hollister, Calif.
Mitronics, Inc., 232 Thirteenth Ave., Newark, N. J.
Neo Sil Products Div., Rubber Associates, Inc., 850 Metropolitan Ave., Brooklyn 11, N. Y.
Nuclear Research Corp., Southampton, Pa.
Scientific Electronic Labs., Inc., 866 Bergen St., Newark 8, N. J.
Seattron Corp., Reading Rd. at Amity, Cincinnati 15, Ohio
Spaulding Fibre Co., Inc., 310 Wheeler St., Tonawanda, N. Y.
Sphere Co., Inc., The, P. O. Box 557, Short Hills, N. J.
Stupakoff Ceramic & Mfg. Co., Latrobe, Pa.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Torwico Electronics, Inc., 975 Frelinghuysen Ave., Newark 5, N. J.
U. S. GASKET CO., FLUOROCARBON PRODUCTS, INC., DIV., 600 N. 10th St., Camden 1, N. J. ADV. PG. 149

CABINETS—Drying

American Instrument Co., Inc., 8030 Georgia Ave., Silver Spring, Md.
BLICKMAN, INC., S., 7900 Gregory Ave., Weehawken, N. J. ADV. PG. 32
Bowser Technical Refrigeration Div. of Bowser, Inc., Terryville, Conn.
BURKE & JAMES, INC., 321 S. Wabash, Chicago, Ill. ADV. PG. 138
Cooper Co., D. C., 1467 S. Michigan Ave., Chicago, Ill.
Daylite Vacuum Products Co., 5207 N. Milwaukee Ave., Chicago 30, Ill.
Durlach Can & Iron Works, 168 7th, Brooklyn, N. Y.
Emerson-Sack-Warner Corp., 150 Dorchester Ave., South Boston 27, Mass.
Engineering Corp. of America, 201 Grove St., Westfield, N. J.
Hamilton Mfg. Co., Two Rivers, Wis.
Henry & Miller Industries, 45 Rockefeller Plaza, New York 20, N. Y.
High Vacuum Equipment Corp., 349 Lincoln St., Hingham, Mass.
Kahle Engineering Co., 1307 Seventh St., North Bergen, N. J.
Laboratory Furniture Co., Inc., P. O. Box 590, Mineola, N. Y.
LENNAPD CO., INC., P. M., 671 Bergen St., Brooklyn 38, N. Y. ADV. PG. 26
Lydon Bros., Inc., 85 Zabriskie St., Hackensack, N. J.
Metalab Equipment Corp., 270 Duffy Ave., Hicksville, N. Y.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Rockwell Co., W. S., 200 Eliot St., Fairfield, Conn.
Steiner-Ives Co., Springfield Rd., Union, N. J.
STOKES MACHINE CO., F. J., 5500 Tabor Rd., Philadelphia 20, Pa. ADV. PG. 24

CABINETS—Instrument

Baker Co., Inc., The, Maplewood, Maine
Bogue Electric Mfg. Co., 52 Iowa Ave., Paterson 3, N. J.
Bowser Technical Refrigeration Div. of Bowser, Inc., Terryville, Conn.
Bristol Engineering Corp., Lincoln Ave. & Pond St., Bristol 1, Pa.
Buck Engineering Co., Inc., 37–41 Marcy St., Freehold, N. J.
Chassis Trak Corp., 6250 E. Iona Rd., Indianapolis, Ind.
Churchill Lighting Corp., 344 Franklin St., Melrose 76, Mass.
Cinema-Television Ltd., Worsley Bridge Rd., London, S.E. 26, England
Daven Co., The, 191 Central Ave., Newark 4, N. J.
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
Durlach Can & Iron Works, 168 7th, Brooklyn, N. Y.
EKCO ELECTRONICS LTD., EKCO WORKS, Southend-on-Sea, Essex, England. ADV. PG. 127
Electronic Associates, Inc., Long Branch, N. J.
Emerson-Sack-Warner Corp., 150 Dorchester Ave., South Boston 27, Mass.
Engineering Corp of America, 201 Grove St., Westfield, N. J.
Falstrom Company, 7 Falstrom Court, Passaic, N. J.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Hamilton Mfg. Co., Two Rivers, Wis.
Heldor Mfg. Corp., 238 Lewis Ave., Paterson, N. J.
Henry & Miller Industries, 45 Rockefeller Plaza, New York 20, N. Y.
Imhof, Ltd., Alfred, 112 New Oxford St., London, W. C. 1.
Insuline Corp. of America, 186 Granite St., Manchester, N. H.
Kahn & Co., Inc., 541 Windsor St., Hartford, Conn.
Karp Metal Products Co., Div. of H & B American Machine Co., 211 63rd St., Brooklyn 20, N. Y.
Keller Products, Inc., Manchester, N. H.
Laboratory Furniture Co., Inc., P. O. Box 590, Mineola, N. Y.
Leland Instruments Ltd., 22–23 Millbank, Westminster, S. W. 1, London, England
LENNARD CO., INC., P. M., 671 Bergen St., Brooklyn 38, N. Y. ADV. PG. 26
Lyon Metal Products, Inc., 10 Montgomery St., Aurora, Ill.
Measurement Engineering Ltd., Arnprior, Ontario, Canada
Metalab Equipment Corp., 270 Duffy Ave., Hicksville, N. Y.
Pelton & Crane Co., 632 Harper Ave., Detroit, Mich.
Scientific Wood Cabinet Co., 90 Holmes St., Belleville 9, N. J.
Watson Mfg. Co., Inc., Jamestown, N. Y.
Wheelco Instruments Div., Barber-Colman Co., Rockford, Ill.

CABINETS—Laboratory

Aireco Inc., 2315 Second Ave., Carmen, Schenectady, N. Y.
Aloe Scientific Div., A. S. Aloe Co., 5655 Kingsbury Blvd., St. Louis 12, Mo.
Baker Co. Inc., The, Maplewood, Maine
Bethlehem Apparatus Co., Inc., Front & Depot Sts., Hellertown, Pa.
BLICKMAN, INC., S., 7900 Gregory Ave., Weehawken, N. J. ADV. PG. 32
Bowser Technical Refrigeration Div. of Bowser, Inc., Terryville, Conn.
Bristol Engineering Corp., Lincoln Ave. & Pond St., Bristol 1, Pa.
Buck Engineering Co., Inc., 37–41 Marcy St., Freehold, N. J.
Durlach Can & Iron Works, 168 7th, Brooklyn, N. Y.
Emerson-Sack-Warner Corp., 150 Dorchester Ave., South Boston 27, Mass.
Hamilton Mfg. Co., Two Rivers, Wis.
Heldor Mfg. Corp., 238 Lewis Ave., Paterson, N. J.
Kewaunee Mfg. Co., 5083 S. Center St., Adrian, Mich.
Laboratory Furniture Co., Inc., P. O. Box 590, Mineola, N. Y.
Leland Instruments, Ltd., 22–23 Millbank, Westminster, S. W. 1, London, England
LENNARD CO., INC., P. M., 671 Bergen St., Brooklyn 38, N. Y. ADV. PG. 26
Lyon Metal Products, Inc., 10 Montgomery St., Aurora, Ill.
Metalab Equipment Corp., 270 Duffy Ave., Hicksville, N. Y.
Tenney Engineering, Inc., 1090 Springfield Rd., Union, N. J.
Watson Mfg. Co., Inc., Jamestown, N. Y.

CABINETS—Shielded

AMERAY CORP., Route #46, Kenvil, N. J. ADV. PG. 123
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 10
Bowser Technical Refrigeration Div. of Bowser, Inc., Terryville, Conn.
Bristol Engineering Corp., Lincoln Ave. & Pond St., Bristol 1, Pa.
Division Lead Co., 7742 W. 61st Place, Summit, Ill.
Durlach Can & Iron Works, 168 7th, Brooklyn, N. Y.
Emerson-Sack-Warner Corp., 150 Dorchester Ave., South Boston 27, Mass.
Hamilton Mfg. Co., Two Rivers, Wis.

Henry & Miller Industries, 45 Rockefeller Plaza, New York 20, N. Y.
Insuline Corp. of America, 186 Granite St., Manchester, N. H.
Knapp Mills, Inc., 23–15 Borden Ave., Long Island City 1, N. Y.
LENNARD CO., INC., P. M., 671 Bergen St., Brooklyn 38, N. Y. ADV. PG. 26
LERMAC, INC., 5303 Adeline St., Oakland, Calif. ADV. PG. 114
Radium Chemical Co., 161 E. 42nd St., New York 17, N. Y.
RAY-PROOF CORP., 513 W. 54th St., New York, N. Y. ADV. PG. 22

CAGES—Animal

Aloe Scientific Div., A. S. Aloe Co., 5655 Kingsbury Blvd., St. Louis 12, Mo.
Biddle Co., James G., 1316 Arch St., Philadelphia 7, Pa.
BLICKMAN, INC., S., 7900 Gregory Ave., Weehawken, N. J. ADV. PG. 32
Emerson-Sack-Warner Corp., 150 Dorchester Ave., South Boston 27, Mass.
LENNARD CO., INC., P. M., 671 Bergen St., Brooklyn 38, N. Y. ADV. PG. 26
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
Wakefield Industries, Inc., 5108 Grove St., Skokie, Ill.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

CALCULATORS—Portable

Clary Multiplier Corp., 408 Junipero St., San Gabriel, Calif.
Computing Devices of Canada, Ltd., P. O. Box 508, Ottawa 4, Ontario, Canada
Curta Calculator Co., 3851 W. Madison St., Chicago 24, Ill.
Paraplegics Mfg. Co., Inc., 10068 Franklin Ave., Franklin Park, Ill.

CALORIMETERS

Baldwin Instrument Co., Ltd., Brooklands Works, Dartford, Kent, England
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
DeMornay-Bonardi, Inc., 780 S. Arroyo Parkway, Pasadena, Calif.
Jarrell-Ash Co., 26 Farwell St., Newtonville, Mass.
Kahl Scientific Instrument Corp., P. O. Box 1166, El Cajon, Calif.
Labline, Inc., 217 N. Desplaines St., Chicago 6, Ill.
Parr Instrument Co., Moline, Ill.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Sargent & Co., E. H., 4647 W. Foster Ave., Chicago 30, Ill.
WELCH SCIENTIFIC CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148

CAMERAS—Recording

Allegany Instrument Co., Inc., Cumberland, Md.
Berndt-Bach, Inc., 6900 Romaine St., Los Angeles 38, Calif.
Bill Jack Scientific Instrument Co., P. O. Box C-39, Solana Beach, Calif.
CAMBRIDGE INSTRUMENT CO., INC., Grand Central Terminal, New York 17, N. Y. ADV. PG. 136
Electro Medical Lab., Inc., South Woodstock 6, Vt.
Electronic Tube Corp., 1200 E. Mermaid Lane, Philadelphia 18, Pa.
Fairchild Camera & Instrument Corp., Robbins Lane, Syosset, N. Y.
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
Graflex, Inc., 154 Clarissa St., Rochester 8, N. Y.
Hycon Mfg. Co., 2961 E. Colorado St., Pasadena 8, Calif.
Industrial Science, 63–15 Forest Ave., Ridgewood 27, N. Y.
Kearfott Co., Inc., 14844 Oxnard St., Van Nuys, Calif.
Maurer, Inc., J. A., 37–01 31st St., Long Island City, N. Y.
Miller Instruments, Inc., William, 325 N. Halstead Ave., Pasadena 8, Calif.
National Cine Equipment Co., Inc., 209 W. 48th St., New York, N. Y.
PSC Applied Research Ltd., 1500 O'Connor Drive, Toronto 16, Ontario, Canada
Telechrome, Inc., 88 Merrick Rd., Amityville, N. Y.
Vectron, Inc., 400 Main St., Waltham, Mass.

CAMERAS—Television

Berndt-Bach, Inc., 6900 Romaine St., Los Angeles 38, Calif.
Cinema-Television Ltd., Worsley Bridge Rd., London, S. E. 26, England
Dage Electronics Div., Thompson Products, Inc., 69 N. Second St., Beech Grove, Ind.
Decade Instrument Co., P. O. Box 153, Caldwell, N. J.
K-M Laboratories, 550 Beverly Rd., Teaneck, N. J.
Kay-Lab, Inc., 1090 Morena Blvd., San Diego 10, Calif.
National Cine Equipment Co., Inc., 209 W. 48th St., New York, N. Y.

CAMERAS—X-RAY

Jarrell-Ash Co., 26 Farwell St., Newtonville, Mass.
North American Philips Co., Inc., 750 S. Fulton Ave., Mt. Vernon, N. Y.
Picker X-Ray Corp., 25 S. Broadway, White Plains, N. Y.
St. John X-Ray Laboratory, Califon, N. J.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.
X-Ray Department of General Electric Co., 4855 Electric Ave., Milwaukee 1, Wis.

CAPACITORS

NOTE: Various types of capacitors are not indicated in this listing. Contact manufacturer for specific type (s) desired.

Aerovox Corp., 740 Belleville Ave., New Bedford, Mass.
Aircraft-Marine Products, Inc., Chemicals & Dielectrics Div., 155 Park St., Elizabethtown, Pa.
ALLEN-BRADLEY CO., 136 W. Greenfield Ave., Milwaukee 4, Wis. ADV. PG. 113
Asheville-Schoonmaker Co., Inc., 900 Jefferson Ave., Newport News, Va.
Astron Corp., 255 Grant Ave., East Newark, N. J.
Bel Fuse, Inc., 311 Mountain Rd., Union City, N. J.
BENDIX AVIATION CORP., CINCINNATI DIV., 203 W. Third St., Cincinnati 2, Ohio. ADV. PG. 14
Bud Radio, Inc., 2118 E. 55th St., Cleveland 3, Ohio
Cambridge Thermionic Corp., 445 Concord Ave., Cambridge 38, Mass.
Cardwell Electronic Productions Corp., Allen D., 97 Whiting St., Plainville, Conn.
Centralab Division of Globe-Union, Inc., 900 E. Keefe Ave., Milwaukee 1, Wis.
Condenser Products Co., 140 Hamilton St., New Haven, Conn.
Cornell-Dubilier Electric Corp., South Plainfield, N. J.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 106
Dumont-Airplane & Marine Instruments, Inc., 15 William St., New York, N. Y.
Dwyer Engineering Co., Inc., Box 483, Nashua, N. H.
Eitel-McCullough, Inc., San Bruno, Calif.
Electro Motive Mfg. Corp., South Park & John St., Willimantic, Conn.
Erie Resistor Corp., 644 W. 12th St., Erie, Pa.
Fansteel Metallurgical Corp., North Chicago, Ill.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
GENERAL ELECTRIC CO., TUBE DEPT., Schenectady 5, N. Y. ADV. PG. 2–6
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
Glenco Corp., Metuchen, N. J.
Gudeman Co., 340 W. Huron St., Chicago 10, Ill.
Hammarlund Mfg. Co., 460 W. 34th St., New York 1, N. Y.
Industrial Condenser Corp., 3243 N. California Ave., Chicago 18, Ill.
INTERNATIONAL RESISTANCE CO., 401 N. Broad St., Philadelphia 8, Pa. ADV. PG. 7
Jeffers Electronics Div., Speer Carbon Co., DuBois, Pa.
Jennings Radio Mfg. Corp., 970 McLaughlin Ave., San Jose 12, Calif.
Johnson Co., E. F., Waseca, Minn.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 131
Magnavox Co., Components Div., Fort Wayne 4, Ind.
Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.
Plastic Capacitors, Inc., 2511 W. Moffat St., Chicago 47, Ill.
Pyramid Electric Co., 1445 Hudson Blvd., North Bergen, N. J.
Rockbar Corp., 215 E. 37th St., New York 16, N. Y.
Sangamo Electric Co., Springfield, Ill.
Sarkes Tarzian, Inc., 415 N. College Ave., Bloomington, Ind.
Sickles Div., F. W., General Instrument Corp., 165 Front St., Chicopee, Mass.
Spaulding Fibre Co., Inc., 310 Wheeler St., Tonawanda, N. Y.
Sprague Electric Co., North Adams, Mass.
Stackpole Carbon Co., St. Marys, Pa.
Stupakoff Ceramic & Mfg. Co., Latrobe, Pa.
Texas Instruments, Inc., 6000 Lemmon Ave., Dallas 9, Texas
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Thordarson-Meissner Mfg. Divs., Mt. Carmel, Ill.
Wheaton Co., T. C., Millville, N. J.

CARBON—(Graphite)

Acheson Colloids Co., Div. of Acheson Industries, Inc., 1631 Washington Ave., Port Huron, Mich.
Hammel Co., O., 209–213 Fourth Ave., Pittsburgh, Pa.
National Carbon Co., A Division of Union Carbide & Carbon Corp., 30 E. 42nd St., New York 17, N. Y.
Speer Carbon Co., St. Marys, Pa.
Stackpole Carbon Co., St. Marys, Pa.

CARBON—Radioactive

See ISOTOPES—Radioactive

CARBOYS—Glass

CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 106

CARBOYS—Stoneware

Knight, Maurice A., 171 Kelly Ave., Akron, Ohio

CATHETOMETERS

CAMBRIDGE INSTRUMENT CO., INC., Grand Central Terminal, New York 17, N. Y. ADV. PG. 136
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Eberbach Corp., Ann Arbor, Mich.
Gaertner Scientific Corp., 1237 Wrightwood Ave., Chicago, Ill.
WELCH SCIENTIFIC CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148

CELLS—Shielded

FARREL-BIRMINGHAM CO., INC., Ansonia, Conn. ADV. PG. 111
Harty Co., Inc., R. V., 1433 Sloman Ave., Detroit 11, Mich.

CEMENT—Acid Proof

Atlas Mineral Products Co., 131 Norman St., Mertztown, Pa.
Bisonite Co., Inc., P. O. Box 84, Kenmore Station, Buffalo 17, N. Y.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Electro Chemical Supply & Engineering Co., 750 Broad St., Emmaus, Pa.
Johns-Manville, 22 E. 40th St., New York 16, N. Y.
Knight, Maurice A., 171 Kelly Ave., Akron, Ohio
National Carbon Co., A Division of Union Carbide & Carbon Corp., 30 E. 42nd St., New York 17, N. Y.
Polymer Industries, Inc., Springdale, Conn.
Rubber & Plastics Compound Co., Inc., 30 Rockefeller Plaza, New York 20, N. Y.
Sauereisen Cements Co., Sauereisen Bldg., Pittsburgh 15, Pa.
Thermal American Fused Quartz Co., Inc., 18–20 Salem St., Dover, N. J.
U. S. Stoneware Co., Akron 9, Ohio

CENTRIFUGES—Clinical

Aloe Scientific Div., A. S. Aloe Co., 5655 Kingsbury Blvd., St. Louis 12, Mo.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
International Equipment Co., 1284 Soldiers Field Rd., Boston 35, Mass.
Labline, Inc., 217 N. Desplaines St., Chicago 6, Ill.
LERMAC, INC., 5303 Adeline St., Oakland, Calif. ADV. PG. 114
Phillips-Drucker, 2245 S. Vanderventer Ave., St. Louis, Mo.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Sharples Corp., 2300 Westmoreland St., Philadelphia 40, Pa.
Sorvall, Inc., Ivan, P. O. Box 230 Pearl St., Norwalk, Conn.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

CENTRIFUGES—Hand Operated

Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

CENTRIFUGES—Micro

Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
International Equipment Co., 1284 Soldiers Field Rd., Boston 35, Mass.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Sargent & Co., E. H., 4647 W. Foster Ave., Chicago 30, Ill.
Sobotka Co., Eric, 104 W. 42nd St., New York, N. Y.

Sorvall, Inc., Ivan, P. O. Box 230 Pearl St., Norwalk, Conn.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

CENTRIFUGES—Ultra

Bio-Rad Laboratories, 800 Delaware St., Berkeley, Calif.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Michel Mfg. Co., 227 N. Water St., Milwaukee 2, Wis.
Specialized Instruments Corp., Belmont, Calif.

CERAMICS

Advanced Vacuum Products Inc., 22 Liberty St., Stamford, Conn.
Aerovox Corp., 740 Belleville Ave., New Bedford, Mass.
American Lava Corp., Chattanooga 5, Tenn.
Centralab Division of Globe Union, Inc., 900 E. Keefe Ave., Milwaukee 1, Wis.
Du-Co Ceramics Co., Box 587, Butler 8, Pa.
Engelhard, Inc., Charles, 850 Passaic St., East Newark, N. J.
FRENCHTOWN PORCELAIN CO., Trenton 9, N. J. ADV. PG. 18
General Ceramics & Steatite Corp., 250 Crows Mill Rd., Keasbey, N. J.
Glenco Corp., Metuchen, N. J.
Gulton Mfg. Corp., 212 Durham Ave., Metuchen, N. J.
Hommel Co., O., 209–213 Fourth Ave., Pittsburgh, Pa.
Isolantite Mfg., Corp., Stirling, N. J.
Kirchberger & Co., Inc., M., 82–92 W. Forest Ave., Englewood, N. J.
Knight, Maurice A., 171 Kelly Ave., Akron, Ohio
Lapp Insulator Co., Inc., 31 Gilbert St., LeRoy, N. Y.
Louthan Mfg. Co., East Liverpool, Ohio
Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.
Porcelain Products, Inc., 422 W. Sandusky St., Findlay, Ohio
Saxonburg Ceramics, Saxonburg, Pa.
Star Porcelain Co., 61 Muirhead Ave., Trenton 9, N. J.
Stupakoff Ceramic & Mfg. Co., Latrobe, Pa.
Thor Ceramics, Inc., 225 Belleville Ave., Bloomfield, N. J.
U. S. Stoneware Co., Akron 9, Ohio
Vitro Corp. of America, 233 Broadway, New York 7, N. Y.
Western Gold & Platinum Works, 589 Bryant St., San Francisco, Calif.
Wheaton Co., T. C., Millville, N. J.

CHAMBERS—Fission Pulse

El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.

CHAMBERS—Ionization

ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 150
Applied Physics Corp., 362 W. Colorado Blvd., Pasadena 1, Calif.
Atomlab, Inc., 489 Fifth Ave., New York 17, N. Y.
Baldwin Instrument Co., Ltd., Brooklands Works, Dartford, Kent, England
Beckman Instruments, Inc., 820 Mission St., South Pasadena 183, Calif.
Burndept Ltd., West St., Erith, Kent, United Kingdom
CAMBRIDGE INSTRUMENT CO., INC., Grand Central Terminal, New York 17, N. Y. ADV. PG. 136
CENTRAL SALES & MFG. CORP., 2 Richwood Place, Denville, N. J. ADV. PG. 140
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
EKCO ELECTRONICS LTD., EKCO WORKS, Southend-on-Sea, Essex, England. ADV. PG. 127
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa
Falk & Co., Ltd., M., 5 Victoria St., London S. W. 1, England
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Isotope Specialties Co., 3816 San Fernando Rd., Glendale, Calif.
JORDAN ELECTRONIC MFG. CO., INC., Union Bldg., 119 E. Union St., Pasadena 1, Calif. ADV. PG. 129, 136
Landsverk Electrometer Co., 550–552 W. Garfield Ave., Glendale 4, Calif.
LEIGHTON LABS., H. W., 26 Herman St., Glen Ridge, N. J. ADV. PG. 124
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
NUCLEAR INSTRUMENT & CHEMICAL CORP., 229 W. Erie St., Chicago 10, Ill. ADV. PG. 137
Ohmart Corp., 2236 Bogen St., P. O. Box 67, Sta. B, Cincinnati 22, Ohio
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
Sensitive Research Instrument Corp., 9 Elm Ave., Mt. Vernon, N. Y.
Special Instruments Laboratory, Inc., 1003 Highland Ave., Knoxville, Tenn.
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 107
Western Radiation Lab., 1107 W. 24th St., Los Angeles 7, Calif.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.
WOOD COUNTER LABORATORY, N., 5491 Blackstone, Chicago 15, Ill. ADV. PG. 139
X-Ray Dept. of General Electric Co., 4855 Electric Ave., Milwaukee, Wis.

CHAMBERS—Ionization, High Pressure

ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 150
EKCO ELECTRONICS LTD., EKCO WORKS, Southend-on-Sea Essex, England. ADV. PG. 127
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
JORDAN ELECTRONIC MFG. CO., INC., Union Bldg., 119 E. Union St., Pasadena 1, Calif. ADV. PG. 129, 136
Ohmart Corp., 2236 Bogen St., P. O. Box 67, Sta. B, Cincinnati 22, Ohio
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
TECHNICAL ASSOCIATES, 140 W. Providencia Ave., Burbank, Calif. ADV. PG. 109

CHAMBERS—Ionization, High Temperature

ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 150
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
JORDAN ELECTRONIC MFG. CO., INC., Union Bldg., 119 E. Union St., Pasadena 1, Calif. ADV. PG. 129, 136
Ohmart Corp., 2236 Bogen St., P. O. Box 67, Sta. B, Cincinnati 22, Ohio
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.

CHAMBERS—Ionization, Neutron Sensitive

ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 150
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
JORDAN ELECTRONIC MFG. CO., INC., Union Bldg., 119 E. Union St., Pasadena 1, Calif. ADV. PG. 129, 136
Landsverk Electrometer Co., 550–552 W. Garfield Ave., Glendale 4, Calif.
LEIGHTON LABS., H. W., 26 Herman St., Glen Ridge, N. J. ADV. PG. 124
NUCLEAR INSTRUMENT & CHEMICAL CORP., 229 W. Erie St., Chicago 10, Ill. ADV. PG. 137
Ohmart Corp., 2236 Bogen St., P. O. Box 67, Sta. B, Cincinnati 22, Ohio
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.

CHAMBERS—Ionization, Proportional

ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 150
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
JORDAN ELECTRONIC MFG. CO., INC., Union Bldg., 119 E. Union St., Pasadena 1, Calif. ADV. PG. 129, 136
North American Philips Co., Inc., 750 S. Fulton Ave., Mt. Vernon, N. Y.
NUCLEAR INSTRUMENT & CHEMICAL CORP., 229 W. Erie St., Chicago 10. Ill. ADV. PG. 137
NUCLEAR MEASUREMENTS CORP., 2460 N. Arlington Ave., Indianapolis 18, Ind. ADV. PG. 122
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
TECHNICAL ASSOCIATES, 140 W. Providencia Ave., Burbank, Calif. ADV. PG. 109
Twentieth Century Electronics Ltd., Dunbar Works, Dunbar St., West Norwood, London, S. E. 27, England
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.

CHAMBERS—Test

Aireo Inc., 2315 Second Ave., Carmen, Schenectady, N. Y.
American Instrument Co., Inc., 8030 Georgia Ave., Silver Spring, Md.
American Research Corp., 11 Brook St., Bristol, Conn.
Anetsberger Bros., Northbrook, Ill.
Baker Co., Inc., The, Maplewood, Maine
Bowser Technical Refrigeration Div. of Bowser, Inc., Terryville, Conn.
Bristol Engineering Corp., Lincoln Ave. & Pond St., Bristol 1, Pa.
Conrad Inc., 141 Jefferson St., Holland, Mich.
Environmental Equipment Corp., 369 Linden St., Brooklyn, N. Y.
FARREL-BIRMINGHAM CO., INC., Ansonia, Conn. ADV. PG. 111
Hudson Bay Division, Refrigeration Systems, Inc., 646 W. Washington Blvd., Chicago, Ill.
International Pump & Machine Works, 11–13 Governor St., Newark 2, N. J.
International Radiant Corp., 40 Matinecock Ave., Port Washington, N. Y.
Kahn & Co., Inc., 541 Windsor St., Hartford, Conn.
Landsverk Electrometer Co., 550–552 W. Garfield Ave., Glendale 4, Calif.
LENNARD CO., INC., P. M., 671 Bergen St., Brooklyn 38, N. Y. ADV. PG. 26
Lindgren & Associates, Erik A., 4515 N. Ravenswood Ave., Chicago 40, Ill.
Merritt & Zaleski, Inc., 33–66 12th St., Long Island City 6, N. Y.
Murphy & Miller, Inc., 1322 S. Michigan Ave., Chicago 5, Ill.
Opad-Green Co., 71 Warren St., New York, N. Y.
Radio Sonic Corp., 32 W. 22nd St., New York 10, N. Y.
Standard Cabinet Co., 52 Washington Ave., Carlstadt, N. J.
STOKES MACHINE CO., F. J., 5500 Tabor Rd., Philadelphia 20, Pa. ADV. PG. 24
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Tenney Engineering Inc., 1090 Springfield Rd., Union, N. J.
Webber Mfg. Co., Inc., 2745 Madison Ave., Indianapolis 3, Ind.

CHARGERS—Battery

Acme Electric Corp., 31 Water St., Cuba, N. Y.
Air Associates, Inc., Teterboro, N. J.
Airpax Products Co., Middle River, Baltimore 20, Md.
Bogue Electric Mfg. Co., 52 Iowa Ave., Paterson 3, N. J.
Cornell-Dubilier Electric Corp., South Plainfield, N. J.
Electrical Facilities, Inc., 4224 Holden St., Oakland 8, Calif.
Electronic Instrument Co., Inc., 84 Withers St., Brooklyn 11, N. Y.
Fansteel Metallurgical Corp., North Chicago, Ill.
Federal Telephone & Radio Co., A Div. of International Telephone & Telegraph Corp., 100 Kingsland Rd., Clifton, N. J.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Heath Co., Benton Harbor, Mich.
Inet Div. of Leach Corp., 4441 Sante Fe Ave., Los Angeles 58, Calif.
Kellogg Switchboard & Supply Co., 79 W. Monroe, Chicago 3, Ill.
Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.
Perkin Engineering Corp., 345 Kansas St., El Segundo, Calif.
Peschel Electronics, Inc., 13 Garden St., New Rochelle, N. Y.
Polytechnic Research & Development Co., Inc., 202 Tillary St., Brooklyn 1, N. Y.
Power Transformer Co., Inc., 532 Mulberry St., Newark 5, N. J.
Raytheon Mfg. Corp., Equipment Operations, Waltham 54, Mass.
Sanford Miller Co., 691 Bedford Ave., Brooklyn 6, N. Y.

Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Thor Electric & Machine Works, 15 S. Jefferson St., Chicago 6, Ill.
WELCH SCIENTIFIC CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.

CHARGERS—Dosimeter

ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 150
Atomlab, Inc., 489 Fifth Ave., New York 17, N. Y.
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 10
Beckman, Inc., Arnold O., 1020 Mission St., South Pasadena, Calif.
BENDIX AVIATION CORP., CINCINNATI DIV., 203 W. Third St., Cincinnati 2, Ohio. ADV. PG. 14
CAMBRIDGE INSTRUMENT CO., INC., Grand Central Terminal, New York 17, N. Y. ADV. PG. 136
Chatham Electronics Corp., Livingston, N. J.
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
Falk & Co., Ltd., M., 5 Victoria St., London S. W. 1, England
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
KELEKET INSTRUMENT DIVISION, 266–8 W. Fourth St., Covington, Ky. ADV. PG. 140
Landsverk Electrometer Co., 550–552 W. Garfield Ave., Glendale 4, Calif.
Marconi Instruments Ltd., 23 Beaver St., New York 4, N. Y.
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
NUCLEAR INSTRUMENT & CHEMICAL CORP., 229 W. Erie St., Chicago 10, Ill. ADV. PG. 137
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 107

CHELATING AGENTS

See also DECONTAMINANTS

Antara Chemicals, Div. of General Aniline & Film Corp., 435 Hudson St., New York 14, N. Y.
Geigh Industrial Chemicals Div. of Geigh Chemical Corp., 89 Barclay St., New York 8, N. Y.
Jasonals Chemical Corp., 825 E. 42nd St., Brooklyn 10, N. Y.
Versenes Inc., 875 Waverly St., Framingham, Mass.

CHEMICALS—Inorganic

Aloe Scientific Div., A. S. Aloe Co., 5655 Kingsbury Blvd., St. Louis 12, Mo.
Antara Chemicals, Div. of General Aniline & Film Corp., 435 Hudson St., New York 14, N. Y.
Baker Chemical Co., J. T., Phillipsburg, N. J.
Barium & Chemicals, Inc., Willoughby, Ohio
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Dow Chemical Co., Midland, Mich.
du Pont de Nemours & Co., Inc., E. I., Wilmington 98, Del.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Hommel Co., O., 209–213 Fourth Ave., Pittsburgh, Pa.
Jasonals Chemical Corp., 825 E. 42nd St., Brooklyn 10, N. Y.
Linick Chemical Co., 59 E. Madison St., Chicago 3, Ill.
Mallinckrodt Chemical Works, Second & Mallinckrodt Sts., St. Louis 7, Mo.
Mathieson Chemical Corp., Olin Industrial Chemicals Div., Baltimore 3, Md.
Merck & Co., Inc., Rahway, N. J.
MICHIGAN CHEMICAL CORP., St. Louis, Mo. ADV. PG. 142
Monsanto Chemical Co., 1700 S. Second St., St. Louis 1, Mo.
Philadelphia Quartz Co., 1146 Public Ledger Bldg., Philadelphia 6, Pa.
Reichhold Chemicals, Inc., 525 N. Broadway, White Plains, N. Y.
Sylvania Electric Products, Inc., 1740 Broadway, New York 19, N. Y.
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

CHEMICALS—Organic

Aloe Scientific Div., A. S. Aloe Co., 5655 Kingsbury Blvd., St. Louis 12, Mo.
Antara Chemicals, Div. of General Aniline & Film Corp., 435 Hudson St., New York 14, N. Y.
Baker Chemical Co., J. T., Phillipsburg, N. J.
Bio-Rad Laboratories, 800 Delaware St., Berkeley, Calif.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Carbide & Carbon Chemicals Co., Div. Union Carbide & Carbon Corp., 30 E. 42nd St., New York 17, N. Y.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Distillation Products Industries, A Division of Eastman Kodak Co., Rochester 3, N. Y.
Dow Chemical Co., Midland, Mich.
du Pont de Nemours & Co., Inc., E. I., Wilmington 98, Del.
Emerson & Cuming, Inc., 869 Washington St., Canton, Mass.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
General Electric Co., Chemical Div., 1 Plastics Ave., Pittsfield, Mass.
General Mills, Inc., Chemical Div., Kensington Rd., Kankakee, Ill.
Glyco Products Co., Inc., 26 Court St., Brooklyn 2, N. Y.
Hommel Co., O., 209–213 Fourth Ave., Pittsburgh, Pa.
Isotope Specialties Co., 3816 San Fernando Rd., Glendale, Calif.
Jasonals Chemical Corp., 825 E. 42nd St., Brooklyn 10, N. Y.
Kessler Chemical Co., Inc., State Rd. & Cottman Ave., Philadelphia 35, Pa.
Mallinckrodt Chemical Works, Second & Mallinckrodt Sts., St. Louis 7, Mo.
Mathieson Chemical Corp., Olin Industrial Chemicals Div., Baltimore 3, Md.
Merck & Co., Inc., Rahway, N. J.
MICHIGAN CHEMICAL CORP., St. Louis, Mo. ADV. PG. 142
Monsanto Chemical Co., 1700 S. Second St., St. Louis 1, Mo.
Nuclear Research Corp., Southampton, Pa.
PILOT CHEMICALS INC., 47 Felton St., Waltham 54, Mass. ADV. PG. 139
Radioactive Products, Inc., 540 W. Congress St., Detroit 26, Mich.
Reichhold Chemicals, Inc., 525 N. Broadway, White Plains, N. Y.
Reilly Tar & Chemical Corp., 1615 Merchants Bank Bldg., 11 S. Meridan St., Indianapolis, Ind.
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

CHOKES—Filter

Aerocoil Inc., 24 Cliff St., Jersey City, N. J.
Aerovox Corp., 740 Belleville Ave., New Bedford, Mass.
Aircraft Transformer Corp., West & Willow Aves., Long Branch, N. J.
Airpax Products Co., Middle River, Baltimore 20, Md.
Atlas Engineering Co., 3 Edgewood St., Roxbury, Mass.
Bogue Electric Mfg. Co., 52 Iowa Ave., Paterson 3, N. J.
C.G.S. Laboratories, Inc., 391 Ludlow St., Stamford, Conn.
Carbide & Carbon Chemicals Co., A Div. of Union Carbide & Carbon Corp., 30 E. 42nd St., New York 17, N. Y.
Central Transformer Co., 910 W. Jackson Blvd., Chicago 7, Ill.
Chicago Standard Transformer Corp., Addison & Elston, Chicago 18, Ill.
Communication Accessories Co., Red Bridge Rd., Hickman Hills, Mo.
Dietz Design & Mfg. Co., Grandview 6, Mo.
Essex Electronics, Springfield Ave., Berkeley Heights, N. J.
Ferranti Electric, Inc., 30 Rockefeller Plaza, New York 20, N. Y.
Gramer-Halldorson Transformer Corp., 2734 Pulaski Rd., Chicago 39, Ill.
Highland Engineering Co., Westbury, N. Y.
Industrial Transformer Corp., Gouldsboro, Pa.
Jeffers Electronics Div., Speer Carbon Co., DuBois, Pa.
Kenyon Transformer Co., Inc., 840 Barry St., New York 59, N. Y.
Miller Instruments, Inc., William, 325 N. Halstead Ave., Pasadena 8, Calif.
New York Transformer Co., Inc., Third Ave., Alpha, N. J.
North Hills Electric Co., Inc., 203–18 35th Ave., Bayside 61, N. Y.
Ortho Filter Corp., 198 Albion Ave., Paterson 2, N. J.
Polyphase Instrument Co., 705 Haverford Rd., Bryn Mawr, Pa.
RADIO CORPORATION OF AMERICA, TUBE DIV., Harrison, N. J. ADV. PG. 19
Raypar, Inc., 7800 W. Addison St., Chicago, Ill.
Raytheon Mfg. Co., Equipment Operations, Waltham 54, Mass.
Sangamo Electric Co., Springfield, Ill.
Speer Carbon Co., St. Marys, Pa.
Standard Winding Corp., 44–62 Johnes St., Newburgh, N. Y.
Sterling Transformer Corp., 297 N. Seventh St., Brooklyn 11, N. Y.
Texas Instruments, Inc., 6000 Lemmon Ave., Dallas 9, Texas
Thordarson-Meissner Mfg. Divs., Mt. Carmel, Ill.
Toracoil Co., 1374 Mobile Court, St. Louis, Mo.
Torwico Electronics, Inc., 975 Frelinghuysen Ave., Newark 5, N. J.
Transformers, Inc., 532 North St., Endicott, N. Y.
Transonic, Inc., 808 Sixteenth St., Box 96A, Bakersfield, Calif.
Tresco, 3824 Terrace St., Philadelphia 28, Pa.
Triad Transformer Corp., 4055 Redwood Ave., Venice, Calif.
U. S. Electronics Corp., 276 Warren St., Lyndhurst, N. J.
United Transformer Co., 150 Varick St., New York 13, N. Y.

CHRONOGRAPHS

BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121
CAMBRIDGE INSTRUMENT CO., INC., Grand Central Terminal, New York 17, N. Y. ADV. PG. 136
Cinema-Television Ltd., Worsley Bridge Rd., London S. E. 26, England
Clary Multiplier Corp., 408 Junipero St., San Gabriel, Calif.
Electrodyne Co., Endicott St., Norwood, Mass.
Electro Medical Lab., Inc., South Woodstock 6, Vt.
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
Gaertner Scientific Corp., 1237 Wrightwood Ave., Chicago, Ill.
Measurement Engineering Ltd., Ampriar, Ontario, Canada
Sangamo Electric Co., Springfield, Ill.
Stitcht Co., Inc., Herman H., 27 Park Place, New York 7, N. Y.

CHRONOSCOPES

American Chronoscope Corp., 316 W. First St., Mt. Vernon, N. Y.
Cinema-Television Ltd., Worsley Bridge Rd., London, S. E. 26, England
Standard Electric Time Co., 89 Logan St., Springfield, Mass.
Sticht Co., Inc., Herman H., 27 Park Place, New York 7, N. Y.

CLAMPS

Air Associates, Inc., Teterboro, N. J.
Aloe Scientific Div., A. S. Aloe Co., 5655 Kingsbury Blvd., St. Louis 12, Mo.
Chandler & Stedman, 398 Newton St., Waltham 54, Mass.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Labline, Inc., 217 N. Desplaines St., Chicago 6, Ill.
Panta Instruments Ltd., 26, Savage Gardens, London, E.C. 3, England
Sargent & Co., E. H., 4647 W. Foster Ave., Chicago 30, Ill.
WELCH SCIENTIFIC CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148

CLEANERS—Bottle

Consolidated Siphon Supply Co., Inc., 24 Wooster St., New York, N. Y.
Cooper Co., D. C., 1467 S. Michigan Ave., Chicago, Ill.
Linick Chemical Co., 59 E. Madison St., Chicago 3, Ill.
Mathieson Chemical Corp., Olin Industrial Chemicals Div., Baltimore 3, Md.
Philadelphia Quartz Co., 1146 Public Ledger Bldg., Philadelphia 6, Pa.

CLEANERS—Vacuum

Breuer Electric Mfg. Co., 5100 N. Ravenswood Ave., Chicago 40, Ill.
Electric Blower Co., 352 Atlantic Ave., Boston 10, Mass.

CLEANING REAGENTS

Air Associates, Inc., Teterboro, N. J.
du Pont de Nemours & Co., Inc., E. I., Wilmington 98, Del.
General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.
Hellige, Inc., 877 Stewart Ave., Long Island City 1, N. Y.
Jasonals Chemical Corp., 825 E. 42nd St., Brooklyn 10, N. Y.
Linick Chemical Co., 59 E. Madison St., Chicago 3, Ill.

CLOTHING—Protective

American Optical Co., 28 Mechanic St., Southbridge, Mass.

BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 10
Buffalo Weaving & Belting Co., Buffalo, N. Y.
Houghton Laboratories, Inc., 322 Bush St., Olean, N. Y.
Irvington Varnish & Insulator Div. of Minnesota Mining & Mfg. Co., 10 Argyle Terrace, Irvington, N. J.
Johns-Manville, 22 E. 40th St., New York 16, N. Y.
Mine Safety Appliances Co., Braddock, Thomas & Meade Sts., Pittsburgh 8, Pa.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.

COATINGS—Conductive

Acheson Colloids Co., Div. of Acheson Industries, Inc., 1631 Washington Ave., Port Huron, Mich.
Advanced Vacuum Products, Inc., 22 Liberty St., Stamford, Conn.
Bisonite Co., Inc., P. O. Box 84, Kenmore Station, Buffalo 17 N. Y.
Consolidated Vacuum Corp., 1775 Mt. Read Blvd., Rochester 3, N. Y.
du Pont de Nemours & Co., Inc., E. I., Wilmington 98, Del.
Electro-Coatings, Inc., 1662 W. Fullerton Ave., Chicago 14, Ill.
Emerson & Cuming Inc., 869 Washington St., Canton, Mass.
Fish-Schurman Corp., 70 Portman Rd., New Rochelle, N. Y.
High Vacuum Equipment Corp., 349 Lincoln St., Hingham, Mass.
HURON INDUSTRIES, P. O. Box 557, Port Huron, Mich. ADV. PG. 146
Javex, P. O. Box 646, Redlands, Calif.
Maas & Waldstein Co., 2121 McCarter Highway, Newark 4, N. J.
Metz Refining Co., 369 Mulberry St., Newark 2, N. J.
Micro-Circuits Co., New Buffalo, Mich.
Optical Film Engineering Co., 2731 N. 6th St., Philadelphia 33, Pa.
Sauereisen Cements Co., Sauereisen Bldg., Pittsburgh 15, Pa.
Scientific Electronic Labs., Inc., 866 Bergen St., Newark 8, N. J.
Techron Co., 254–256 Friend St., Boston 14, Mass.
Vorac Co., 147 Meadow Rd., Rutherford, N. J.

COATINGS—Protective

Amercoat Corp., 4809 Firestone Blvd., South Gate, Calif.
Arco Co., 7301 Bessemer Ave., Cleveland 27, Ohio
Armstrong Cork Co., 1010 Concord St., Lancaster, Pa.
Atlas Mineral Products Co., 131 Norman St., Mertztown, Pa.
Biggs Co., Carl H., 2255 Barry Ave., West Los Angeles, Calif.
Bisonite Co., Inc., P. O. Box 84, Kenmore Station, Buffalo 17, N. Y.
Borne Scrymser Co., 632 Front St., Elizabeth, N. J.
Carboline Co., 331 Thornton, St. Louis 19, Mo.
Consolidated Vacuum Corp., 1775 Mt. Read Blvd., Rochester 3, N. Y.
Cooper Co., D. C., 1467 S. Michigan Ave., Chicago, Ill.
Dow Chemical Co., Midland, Mich.
du Pont de Nemours & Co., Inc., E. I., Wilmington 98, Del.
Durez Plastics & Chemicals, Inc., 1921 Walck Rd., North Tonawanda, N. Y.
Eastern Precision Resistor Corp., 130–11 90th Ave., Richmond Hill, N. Y.
Electro Chemical Supply & Engineering Co., 750 Broad St., Emmaus, Pa.
Electro-Coatings, Inc., 1662 W. Fullerton Ave., Chicago 14, Ill.
Electro-Technical Products Div., Sun Chemical Corp., 113 E. Centre St., Nutley 10, N. J.
Electronic Mechanics, Inc., 101 Clifton Blvd., Clifton, N. J.
Emerson & Cuming, Inc., 869 Washington St., Canton, Mass.
Hamilton Kent Mfg. Co., Kent, Ohio
Hammel Co., O., 209–213 Fourth Ave., Pittsburgh, Pa.
Horn Co., Inc., A. C., 10th St. & 44th Ave., Long Island City 1, N. Y.
Houghton Laboratories, Inc., 322 Bush St., Olean, N. Y.
HURON INDUSTRIES, P. O. Box 557, Port Huron, Mich. ADV. PG. 146
Irvington Varnish & Insulator Div. of Minnesota Mining & Mfg. Co., 10 Argyle Terrace, Irvington, N. J.
Javex, P. O. Box 646, Redlands, Calif.
Johns-Manville, 22 E. 40th St., New York 16, N. Y.
Knight, Maurice A., 171 Kelly Ave., Akron, Ohio
LENNARD CO., INC., P. M., 671 Bergen St., Brooklyn 38, N. Y. ADV. PG. 26
Maas & Waldstein Co., 2121 McCarter Highway, Newark 4, N. J.
Micro-Circuits Co., New Buffalo, Mich.
North American Research Labs., Inc., 725 Lexington Ave., Kenilworth, N. J.
Nukem Products Corp., 111 Colgate Ave., Buffalo 20, N. Y.
Philadelphia Quartz Co., 1146 Public Ledger Bldg., Philadelphia 6, Pa.
Prufcoat Laboratories, Inc., 63 Main St., Cambridge 42, Mass.
Reichhold Chemicals, Inc., 525 N. Broadway, White Plains, N. Y.
Reilly Tar & Chemical Corp., 1615 Merchants Bank Bldg., 11 S. Meridan St., Indianapolis, Ind.
Rubber & Plastics Compound Co., Inc., 30 Rockefeller Plaza, New York 20, N. Y.
Sauereisen Cements Co., Sauereisen Bldg., Pittsburgh 15, Pa.
Shell Chemical Corp., 380 Madison Ave., New York 17, N. Y.
SOLAR AIRCRAFT CO., 2200 Pacific Highway, San Diego 12, Calif. ADV. PG. 28
Sphere Co., Inc., The, P. O. Box 557, Short Hills, N. J.
Union Bay State Chemical Co., Inc., 491 Main St., Cambridge 42, Mass.
United Chromium, Incorporated, 100 E. 42nd St., New York, N. Y.
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.
U. S. Stoneware Co., Akron 9, Ohio
Varniton Co., 416 N. Varney St., Burbank, Calif.
Vorac Co., 147 Meadow Rd., Rutherford, N. J.

COATINGS—Strippable

Amercoat Corp., 4809 Firestone Blvd., South Gate, Calif.
Armstrong Cork Co., 1010 Concord St., Lancaster, Pa.
Atlas Mineral Products Co., 131 Norman St., Mertztown, Pa.
Bisonite Co., Inc., P. O. Box 84, Kenmore Station, Buffalo 17, N. Y.
Carboline Co., 331 Thornton, St. Louis 19, Mo.
Cooper Co., D. C., 1467 S. Michigan Ave., Chicago, Ill.
Dow Chemical Co., Midland, Mich.
Houghton Laboratories, Inc., 322 Bush St., Olean, N. Y.
Irvington Varnish & Insulator Div. of Minnesota Mining & Mfg. Co., 10 Argyle Terrace, Irvington, N. J.
Maas & Waldstein Co., 2121 McCarter Highway, Newark 4, N. J.
Rubber & Plastics Compound Co., Inc., 30 Rockefeller Plaza, New York 20, N. Y.
Sphere Co., Inc., The, P. O. Box 557, Short Hills, N. J.
United Chromium, Incorporated, 100 E. 42nd St., New York, N. Y.
U. S. Stoneware Co., Akron 9, Ohio
Varniton Co., 416 N. Varney St., Burbank, Calif.
Vorac Co., 147 Meadow Rd., Rutherford, N. J.
Zophar Mills, Inc., 112–130 26th St., Brooklyn 32, N. Y.

COLLECTORS—Dust

B-I-F Industries, Inc., P. O. Box 1342, Providence, R. I.
Baker Co., Inc., The, Maplewood, Maine
Day Co., The, 820 Third Ave., NE, Minneapolis 13, Minn.
Eberbach Corp., Ann Arbor, Mich.
Electrovent Fan & Mfg. Co., 812 W. Lake St., Chicago 7, Ill.
FICKLEN, III, JOSEPH B., 1848 E. Mountain St., Pasadena 7, Calif. ADV. PG. 142
Hagan Corp., 323 Fourth Ave., Pittsburgh 22, Pa.
LENNARD CO., INC., P. M., 671 Bergen St., Brooklyn 38, N. Y. ADV. PG. 26
Omega Machine Co., Div. of B-I-F Industries, Inc., 530 Harris Ave., Providence 1, R. I.
Pulverizing Machinery Co., 43 Chatham Rd., Summit, N. J.
Sargent & Co., E. H., 4647 W. Foster Ave., Chicago 30, Ill.
Scientific Glass Apparatus Co., Inc., 100 Lakewood Terrace, Bloomfield, N. J.
SPELLMAN TELEVISION CO., INC., 3029 Webster Ave., Bronx 67, N. Y. ADV. PG. 134

COLORIMETERS

American Optical Co., Instrument Div., Buffalo 15, N. Y.
Bausch & Lomb Optical Co., 630 St. Paul St., Rochester 2, N. Y.
Biddle Co., James G., 1316 Arch St., Philadelphia 7, Pa.
Coleman Instruments, Inc., Maywood, Ill.
Falk & Co., Ltd., M., 5 Victoria St., London S.W. 1, England
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Franklin Electronics, Inc., 415 W. Pike St., Philadelphia 40, Pa.
Hellige, Inc., 877 Stewart Ave., Long Island City 1, N. Y.
Instrument Development Labs., Inc., 163 Highland Ave., Needham Heights, Mass.
Jarrell-Ash Co., 26 Farwell St., Newtonville, Mass.
Kruger Instruments, Harold, Box 164, San Gabriel, Calif.
LEIGHTON LABS., H. W., 26 Herman St., Glen Ridge, N. J. ADV. PG. 124
Leitz, Inc., E., 468 Fourth Ave., New York, N. Y.
Manufacturers Engineering & Equipment Corp., York & Mill Rds., Hatboro, Pa.
Phoenix Precision Instrument Co., 3803–05 North 5th St., Philadelphia, Pa.
Rascher & Belzold, Inc., 730 N. Franklin St., Chicago 10, Ill.
Rubicon Co., Ridge Ave. at 35th St., Philadelphia 32, Pa.
Sargent & Co., E. H., 4647 W. Foster Ave., Chicago 30, Ill.
Sobotka Co., Eric, 104 W. 42nd St., New York, N. Y.
Telechrome, Inc., 88 Merrick Rd., Amityville, N. Y.
WELCH SCIENTIFIC CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

COLUMNS—Absorption

Ace Glass, Inc., Vineland, N. J.
Bio-Rad Laboratories, 800 Delaware St., Berkeley, Calif.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 106
Daylite Vacuum Products Co., 5207 N. Milwaukee Ave., Chicago 30, Ill.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Foster Wheeler Corp., 165 Broadway, New York 6, N. Y.
Knight, Maurice A., 171 Kelly Ave., Akron, Ohio
Lapp Insulator Co., Inc., 31 Gilbert St., LeRoy, N. Y.
Leader Iron Works, Inc., 2110 N. Jasper, Decatur, Ill.
LERMAC, INC., 5303 Adeline St., Oakland, Calif. ADV. PG. 114
Pfaudler Co., 1002 West Ave., Rochester, N. Y.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
Scientific Glass Apparatus Co., Inc., 100 Lakewood Terrace, Bloomfield, N. J.
Struthers-Wells Corp., Warren, Pa.
U. S. Stoneware Co., Akron 9, Ohio

COLUMNS—Distilling, Fractionating, etc.

Ace Glass, Inc., Vineland, N. J.
American Copper & Brass Works, Inc., Cincinnati 2, Ohio
American Locomotive Co., Bldg. 143, Schenectady, N. Y.
Babcock & Wilcox Co., 161 E. 42nd St., New York 17, N. Y.
BLICKMAN, INC., S., 7900 Gregory Ave., Weehawken, N. J. ADV. PG. 32
Brighton Copper Works, Inc., 820 State Ave., Cincinnati 4, Ohio
Consolidated Siphon Supply Co., 24 Wooster St., New York, N. Y.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 106
Daylite Vacuum Products Co., 5207 N. Milwaukee Ave., Chicago 30, Ill.
Foster Wheeler Corp., 165 Broadway, New York 6, N. Y.
Glass Engineering Laboratories, Belmont, Calif.
Jasonals Chemical Corp., 825 E. 42nd St., Brooklyn 10, N. Y.
Knight, Maurice A., 171 Kelly Ave., Akron, Ohio
Kontes Glass Co., Spruce Co., Vineland, N. J.
Lapp Insulator Co., Inc., 31 Gilbert St., LeRoy, N. Y.
Leader Iron Works, Inc., 2110 N. Jasper, Decatur, Ill.
LERMAC, INC., 5303 Adeline St., Oakland, Calif. ADV. PG. 114
Pfaudler Co., 1002 West Ave., Rochester, N. Y.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
Sargent & Co., E. H., 4647 W. Foster Ave., Chicago 30, Ill.
Scientific Glass Apparatus Co., Inc., 100 Lakewood Terrace, Bloomfield, N. J.
Struthers-Wells Corp., Warren, Pa.
U. S. Stoneware Co., Akron 9, Ohio
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

COLUMNS—Ion Exchange

Ace Glass, Inc., Vineland, N. J.
Bio-Rad Laboratories, 800 Delaware St., Berkeley, Calif.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 106
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Foster Wheeler Corp., 165 Broadway, New York 6, N. Y.
Illinois Water Treatment Co., 858 Cedar St., Rockford, Ill.
Jasonals Chemical Corp., 825 E. 42nd St., Brooklyn 10, N. Y.
Kontes Glass Co., Spruce St., Vineland, N. J.
LERMAC, INC., 5303 Adeline St., Oakland, Calif. ADV. PG. 114

Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
Sargent & Co., E. H., 4647 W. Foster Ave., Chicago 30, Ill.
Scientific Glass Apparatus Co., Inc., 100 Lakewood Terrace, Bloomfield, N. J.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

COMPARATOR—DENSITOMETERS

Baird Associates, Inc., 33 University Rd., Cambridge 38, Mass.
Baldwin Instrument Co., Ltd., Brooklands Works, Dartford, Kent, England
Bausch & Lomb Optical Co., 630 St. Paul St., Rochester 2, N. Y.
Falk & Co., Ltd., M., 5 Victoria St., London S.W. 1, England
Gaertner Scientific Corp., 1237 Wrightwood Ave., Chicago, Ill.
Instrument Development Labs., Inc., 163 Highland Ave., Needham Heights, Mass.
Jarrell-Ash Co., 26 Farwell St., Newtonville, Mass.
National Spectrographic Labs., Inc., 6300 Euclid Ave., Cleveland 3, Ohio
Photoswitch Div., Electronic Corp. of America, 77 Broadway, Cambridge 42, Mass.
Specialized Instruments Corp., Belmont, Calif.
Standard Electronics Research Corp., 2 East End Ave., New York 21, N. Y.
WELCH SCIENTIFIC CORP., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

COMPARATORS—Hydrogen Ion

CAMBRIDGE INSTRUMENT CO., INC., Grand Central Terminal, New York 17, N. Y. ADV. PG. 136
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Heltige, Inc., 877 Stewart Ave., Long Island City 1, N. Y.
LaMotte Chemical Products Co., Towson 4, Md.
Marconi Instruments, Ltd., 23 Beaver St., New York 4, N. Y.
WELCH SCIENTIFIC CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

COMPARATORS—Micro Photometer

Gaertner Scientific Corp., 1237 Wrightwood Ave., Chicago, Ill.
Jarrell-Ash Co., 26 Farwell St., Newtonville, Mass.
LEEDS & NORTHPUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 131
Sobotka Co., Eric, 104 W. 42nd St., New York, N. Y.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

COMPOUNDS—High Vacuum Sealing

Biggs Co., Carl H., 2255 Barry Ave., West Los Angeles, Calif.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Consolidated Vacuum Corp., 1775 Mt. Read Blvd., Rochester 3, N. Y.
International Pump & Machine Works, 11–13 Governor St., Newark 2, N. J.
National Research Corp., 160 Charlemont St., Newton Highlands, Mass.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

COMPOUNDS—Labeled

See ISOTOPE LABELED COMPOUNDS

COMPRESSORS

BEACH-RUSS CO., 50 Church St., New York 7, N. Y. ADV. PG. 104
Clark Bros. Co., Div. of Dresser Operations, Inc., Lincoln Ave. & Fifth St., Olean, N. Y.
DeVilbiss Co., 300 Phillips Ave., Toledo, Ohio
Gast Mfg. Corp., 137 Hinkley St., Benton Harbor, Mich.
Harris, Inc., 61 S.E. Yamhill, Portland, Ore.
Ingersoll-Rand Co., 11 Broadway, New York 4, N. Y.
Joy Mfg. Co., Oliver Bldg., Pittsburgh 22, Pa.
Kahlenberg Bros. Co., 12th & Monroe Sts., Two Rivers, Wis.
Keystone Compressor Co., 8417 Hagerman St., Philadelphia 36, Pa.
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave. S., Minneapolis, Minn.
Pelton & Crane Co., 632 Harper Ave., Detroit, Mich.
Resdel Engineering Corp., 2351 Riverside Drive, Los Angeles 39, Calif.
Thermo Instrument Co., P. O. Box 336, 1310 Old County Rd., Belmont, Calif.
Trane Company, The, LaCrosse, Wis.
WELCH SCIENTIFIC CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148
Worthington Corp., Harrison, N. J.
York Corp., York, Pa.

COMPUTERS—Analog

AERO RESEARCH INSTRUMENT CO., 1901 N. Hermitage Ave., Chicago 22, Ill. ADV. PG. 114
Ahrendt Instrument Co., 4910 Calvert Rd., College Park, Md.
Air Associates, Inc., Teterboro, N. J.
Alcar Instruments, Inc., 20–21 Wagaraw Rd., Fair Lawn, N. J.
Audio Instrument Co., Inc., 133 W. 14th St., New York 11, N. Y.
Avion Instrument Corp., Div. of American Car & Foundry Co., 295 State Highway #17, Paramus, N. J.
BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121
Bill Jack Scientific Instrument Co., P. O. Box C-39, Solana Beach, Calif.
Boeing Airplane Co., Seattle Div., Seattle 14, Wash.
Computing Devices of Canada, Ltd., P. O. Box 508, Ottawa 4, Ontario, Canada
CONSOLIDATED ENGINEERING CORP., 300 N. Sierra Madre Villa, Pasadena 15, Calif. ADV. PG. Inside Front Cover
Cubic Corp., 2841 Canon St., San Diego 6, Calif.
CURTISS-WRIGHT CORP., ELECTRONICS DIV., Carlstadt, N. J. ADV. PG. 31
Daystrom Instrument Co., Archbald, Pa.
Eclipse-Pioneer Div., Bendix Aviation Corp., Teterboro, N. J.
Electronic Associates, Inc., Long Branch, N. J.
Epsco, Incorporated, 126 Massachusetts Ave., Boston, Mass.
Farrand Optical Co., Inc., Bronx Blvd. at E. 238th St., New York 70, N. Y.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
FORD INSTRUMENT CO., DIV. OF SPERRY CORP., 31–10 Thomson Ave., Long Island City, N. Y. ADV. PG. 105
GENERAL ELECTRIC CO., ATOMIC POWER EQUIPMENT COMPONENT, 2900 Campbell Ave., Schenectady 6, N. Y. ADV. PG. 2–6
GENERAL MILLS, INC., MECHANICAL DIV., 1620 Central Ave., N. E., Minneapolis, Minn. ADV. PG. 101
Gerber Scientific Instrument Co., 89 Spruce St., Hartford, Conn.
Goodyear Aircraft Corp., 1210 Massillian Rd., Akron 15, Ohio
Hycon Mfg. Co., 2961 E. Colorado St., Pasadena 8, Calif.
Infra Electronic Corp., Roseland, N. J.
International Research Associates, 2221 Warwick Ave., Santa Monica, Calif.
KOLLSMAN INSTRUMENT CORP., 80–08 45th Ave., Elmhurst, N. Y. ADV. PG. 11
L & O Research & Development Corp., 134 N. Wayne Ave., Wayne, Pa.
Laboratory for Electronics, Inc., 75 Pitts St., Boston 14, Mass.
Lavoie Laboratories, Morganville, N. J.
Librascope, Inc., 808 Western Ave., Glendale, Calif.
Link Aviation, Inc., Binghamton, N. Y.
Magnavox Co., Components Div., Fort Wayne 4, Ind.
Magnetic Amplifiers, Inc., 632 Tinton Ave., New York 55, N. Y.
Maxson Corp., W. L., 460 W. 34th St., New York 1, N. Y.
Mid-Century Instrumatic Corp., 611 Broadway, New York 12, N. Y.
Miller Instruments, Inc., William, 325 N. Halstead Ave., Pasadena 8, Calif.
PSC Applied Research Ltd., 1500 O'Connor Drive, Toronto 16, Ontario, Canada
Philbrick Researches, Inc., George A., 230 Congress St., Boston 10, Mass.
Reeves Instrument Corp., 215 E. 91st, New York 28, N. Y.
Remington Rand Inc., Engineering Research Associates Div., 1902 W. Minnehaha Ave., St. Paul W4, Minn.
Servo Corp. of America, 2020 Jericho Turnpike, New Hyde Park, N. Y.
Servomechanisms, Inc., 500 Franklin Ave., Garden City, N. Y.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Streeter-Amet Co., 4101 Ravenswood Ave., Chicago 13, Ill.
Ultrasonic Corp., 640 Memorial Drive, Cambridge 39, Mass.

COMPUTERS—Digital

A.C.F. Electronics, Inc., Alexandria, Va.
Ahrendt Instrument Co., 4910 Calvert Rd., College Park, Md.
Air Associates, Inc., Teterboro, N. J.
Audio Instrument Co., Inc., 133 W. 14th St., New York 11, N. Y.
Brush Electronics Co., 3405 Perkins Ave., Cleveland 14, Ohio
Burroughs Corp., Electronic Instruments Div., 1209 Vine St., Philadelphia 7, Pa.
Computer Control Co., Inc., 92 Broad St., Babson Park 57, Mass.
Computing Devices of Canada, Ltd., P. O. Box 508, Ottawa 4, Ontario, Canada
CONSOLIDATED ENGINEERING CORP., 300 N. Sierra Madre Villa, Pasadena 15, Calif. ADV. PG. Inside Front Cover
Cubic Corp., 2841 Canon St., San Diego 6, Calif.
Daystrom Instrument Co., Archbald, Pa.
Electronic Computer Div., Underwood Corp., 35–10 36th Ave., Long Island City 6, N. Y.
Epsco, Incorporated, 126 Massachusetts Ave., Boston, Mass.
Farrand Optical Co., Inc., Bronx Blvd. at E. 238th St., New York 70, N. Y.
Ferranti Electric, Inc., 30 Rockefeller Plaza, New York 20, N. Y.
FORD INSTRUMENT CO., DIV. OF SPERRY CORP., 31–10 Thomson Ave., Long Island City, N. Y. ADV. PG. 105
GENERAL ELECTRIC CO., ATOMIC POWER EQUIPMENT COMPONENT, 2900 Campbell Ave., Schenectady 6, N. Y. ADV. PG. 2–6
Hewlett-Packard Co., 395 Page Mill Rd., Palo Alto, Calif.
Hogan Laboratories, Inc., 155 Perry St., New York 14, N. Y.
Hycon Mfg. Co., 2961 E. Colorado St., Pasadena 8, Calif.
Infra Electronic Corp., Roseland, N. J.
International Research Associates, 2221 Warwick Ave., Santa Monica, Calif.
Jacobs Instrument Co., 4718 Bethesda Ave., Bethesda, Md.
KOLLSMAN INSTRUMENT CORP., 80–08 45th Ave., Elmhurst, N. Y. ADV. PG. 11
L & O Research & Development Corp., 134 N. Wayne Ave., Wayne, Pa.
Laboratory for Electronics, Inc., 75 Pitts St., Boston 14, Mass.
Lavoie Laboratories, Morganville, N. J.
Librascope, Inc., 808 Western Ave., Glendale, Calif.
Macdonald Co., Inc., W. S., 33 University Rd., Cambridge 38, Mass.
Magnavox Co., Components Div., Fort Wayne 4, Ind.
Magnetics Research Co., 142 King St., Chappaqua, N. Y.
Minnesota Electronics Corp., 1058 University Ave., St. Paul 4, Minn.
National Cash Register Co., Electronics Div., 3348 W. El Segundo Blvd., Hawthorne, Calif.
NUCLEAR DEVELOPMENT ASSOCIATES, INC., 80 Grand St., White Plains, N. Y. ADV. PG. 102
Potter Instrument Co., 115 Cutter Mill Rd., Great Neck, N. Y.
Reeves Instrument Corp., 215 E. 91st St., New York 28, N. Y.
Remington Rand Inc., Engineering Research Associates Div., 1902 W. Minnehaha Ave., St. Paul W4, Minn.
Servo Corp. of America, 2020 Jericho Turnpike, New Hyde Park, N. Y.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Streeter-Amet Co., 4101 Ravenswood Ave., Chicago 13, Ill.
Taller & Cooper Inc., 75 Front St., Brooklyn, N. Y.
Technitrol Engineering Corp., 2751 N. 4th St., Philadelphia 33, Pa.
Telecomputing Corp., 133 E. Santa Anita Ave., Burbank, Calif.
Ultrasonic Corp., 640 Memorial Drive, Cambridge 39, Mass.
Walkirt Co., 145 W. Hazel, Inglewood, Calif.
Wang Laboratories, 37 Hurley St., Cambridge 41, Mass.
Yellow Springs Instrument Co., Inc., P. O. Box 106, Yellow Springs, Ohio

COMPUTERS—Electronic

Air Associates Inc., Teterboro, N. J.
Audio Instrument Co., Inc., 133 W. 14th St., New York 11, N. Y.
Avion Instrument Corp., Div. of American Car & Foundry Co., 295 State Highway #17, Paramus, N. J.
BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121
Burroughs Corp., Electronic Instruments Div., 1209 Vine St., Philadelphia 7, Pa.
Collins Radio Co., Cedar Rapids, Iowa
Computing Devices of Canada, Ltd., P. O. Box 508, Ottawa 4, Ontario, Canada
CONSOLIDATED ENGINEERING CORP., 300 N. Sierra Madre Villa, Pasadena 15, Calif. ADV. PG. Inside Front Cover
Cubic Corp., 2841 Canon St., San Diego 6, Calif.
CURTISS-WRIGHT CO., ELECTRONICS DIV., Carlstadt, N. J. ADV. PG. 31
Detectron Corp., 5420 Vineland Ave., North Hollywood, Calif.
Eclipse-Pioneer Div., Bendix Aviation Corp., Teterboro, N. J.
Electro-Mechanical Research, Inc., 64 Main St., Ridgefield, Conn.
Electronic Associates, Inc., Long Branch, N. J.

Electronic Computer Div., Underwood Corp., 35–10 36th Ave., Long Island City 6, N. Y.
Epsco, Incorporated, 126 Massachusetts Ave., Boston, Mass.
Exact Weight Scale Co., 944 W. Fifth Ave., Columbus 8, Ohio
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
FORD INSTRUMENT CO., DIV. OF SPERRY CORP., 31–10 Thomson Ave., Long Island City, N. Y. ADV. PG. 105
GENERAL ELECTRIC CO., ATOMIC POWER EQUIPMENT COMPONENT, 2900 Campbell Ave., Schenectady 6, N. Y. ADV. PG. 2–6
GENERAL MILLS, INC., MECHANICAL DIV., 1620 Central Ave., N. E., Minneapolis, Minn. ADV. PG. 101
Goodyear Aircraft Corp., 1210 Massillion Rd., Akron 15, Ohio
Hagan Corp., 323 Fourth Ave., Pittsburgh 22, Pa.
Hagan Laboratories, Inc., 155 Perry St., New York 14, N. Y.
Hycon Mfg. Co., 2961 E. Colorado St., Pasadena 8, Calif.
Infra Electronic Corp., Roseland, N. J.
International Research Associates, 2221 Warwick Ave., Santa Monica, Calif.
Jacobs Instrument Co., 4718 Bethesda Ave., Bethesda, Md.
L & O Research & Development Corp., 134 N. Wayne Ave., Wayne, Pa.
Laboratory for Electronics, Inc., 75 Pitts St., Boston 14, Mass.
Lavoie Laboratories, Morganville, N. J.
LEEDS & NORTHRUP CO., 4970 Stanton Ave., Philadelphia 44, Pa. ADV. PG. 131
Librascope, Inc., 808 Western Ave., Glendale, Calif.
Macdonald Co., Inc., W. S., 33 University Rd., Cambridge 38, Mass.
Magnavox Co., Components Div., Fort Wayne 4, Ind.
Magnetics Research Co., 142 King St., Chappaqua, N. Y.
Maxson Corp., W. L., 460 W. 34th St., New York 1, N. Y.
Mid-Century Instrumatic Corp., 611 Broadway, New York 12, N. Y.
National Cash Register Co., Electronics Div., 3348 W. El Segundo Blvd., Hawthorne, Calif.
NUCLEAR DEVELOPMENT ASSOCIATES, INC., 80 Grand St., White Plains, N. Y. ADV. PG. 102
Philbrick Researches, Inc., George A., 230 Congress St., Boston 10, Mass.
Potter Instrument Co., 115 Cutter Mill Rd., Great Neck, N. Y.
Reeves Instrument Corp., 215 E. 91st St., New York 28, N. Y.
Servo Corp. of America, 2020 Jericho Turnpike, New Hyde Park, N. Y.
Servomechanisms, Inc., 500 Franklin Ave., Garden City, N. Y.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Streeter-Amet Co., 4101 Ravenswood Ave., Chicago 13, Ill.
Technitrol Engineering Corp., 2751 N. 4th St., Philadelphia 33, Pa.
Telecomputing Corp., 133 E. Santa Anita Ave., Burbank, Calif.
Ultrasonic Corp., 640 Memorial Drive, Cambridge 39, Mass.
Walkirt Co., 145 W. Hazel, Inglewood, Calif.
Wang Laboratories, 37 Hurley St., Cambridge 41, Mass.
Yellow Springs Instrument Co., Inc., P. O. Box 106, Yellow Springs, Ohio

CONCRETE—Shielding

See SHIELDING

CONNECTORS—Electrical

Air Associates, Inc., Teterboro, N. J.
Aircraft-Marine Products, Inc., 2100 Paxton St., Harrisburg, Pa.
American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.
Breeze Corporations, Inc., 700 Liberty Ave., Union, N. J.
Buggie & Co., H. H., 726 Stanton St., Toledo, Ohio
Cannon Electric Co., 3209 Humboldt St., Los Angeles, Calif.
DeJur-Amsco Corp., 45–01 Northern Blvd., Long Island City 1, N. Y.
EKCO ELECTRONICS LTD., EKCO WORKS, Southend-on-Sea, Essex, England. ADV. PG. 127
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
Gulton Mfg. Corp., 212 Durham Ave., Metuchen, N. J.
Imtra Corp., 58 Charles St., Cambridge 41, Mass.
Infra Electronic Corp., Roseland, N. J.
Joy Mfg. Co., Oliver Bldg., Pittsburgh 22, Pa.
Kings Electronics Co., 40 Marbledale Rd., Tuckahoe, N. Y.
Methode Manufacturing Corp., 2021 W. Churchill St., Chicago 47, Ill.
Mycalex Corp. of America, Clifton Blvd., Clifton, N. J.
Naer Corp., 2301 S. Purdue Ave., West Los Angeles, Calif.
Radio Sonic Corp., 32 W. 22nd St., New York 10, N. Y.
Sealtron Corp., Reading Rd. at Amity, Cincinnati 15, Ohio
Scintilla Division, Bendix Aviation Corp., Sidney, N. Y.
Titeflex, Inc., 500 Frelinghuysen Ave., Newark 5, N. J.
U. S. GASKET CO., FLUOROCARBON PRODUCTS, INC., DIV., 600 N. 10th St., Camden 1, N. J. ADV. PG. 149
WELCH SCIENTIFIC CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148
Winchester Electronics, Inc., Willard Road, Norwalk, Conn.

CONTAINERS—Acid Proof

BLICKMAN, INC., S., 7900 Gregory Ave., Weehawken, N. J. ADV. PG. 32
Consolidated Siphon Supply Co., Inc., 24 Wooster St., New York, N. Y.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG 106
Electro Chemical Supply & Engineering Co., 750 Broad St., Emmaus, Pa.
Knapp Mills Inc., 23–15 Borden Ave., Long Island City 1, N. Y.
Knight, Maurice A., 171 Kelly Ave., Akron, Ohio
Lapp Insulator Co., Inc., 31 Gilbert St., LeRoy, N. Y.
Leader Iron Works, Inc., 2110 N. Jasper, Decatur, Ill.
NATIONAL LEAD CO., 111 Broadway, New York 6, N. Y. ADV. PG. 27
Panta Instruments Ltd., 26, Savage Gardens, London, E.C. 3, England
Pfaudler Co., 1002 West Ave., Rochester, N. Y.
Thermal American Fused Quartz Co., Inc., 18–20 Salem St., Dover, N. J.
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.
U. S. Stoneware Co., Akron 9, Ohio

CONTAINERS—Glass

Ace Glass, Inc., Vineland, N. J.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 106
Daylite Vacuum Products Co., 5207 N. Milwaukee Ave., Chicago 30, Ill.
General Ceramics & Steatite Corp., 250 Crows Mill Rd., Keasbey, N. J.
LERMAC, INC., 5303 Adeline St., Oakland, Calif. ADV. PG. 114
Phoenix Precision Instrument Co., 3803–05 N. 5th St., Philadelphia, Pa.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
Scientific Glass Apparatus Co., Inc., 100 Lakewood Terrace, Bloomfield, N. J.
Special Glass Products Co., 10 W. 33rd St., New York 1, N. Y.
Wheaton Co., T. C., Millville, N. J.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

CONTAINERS—Glass Lined

General Ceramics & Steatite Corp., 250 Crows Mill Rd., Keasbey, N. J.
Pfaudler Co., 1002 West Ave., Rochester, N. Y.

CONTAINERS—Hard Rubber

Luzerne Rubber Co., Muirhead Ave., Trenton, N. J.
Minor Rubber Co., 49 Ackerman St., Bloomfield, N. J.
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

CONTAINERS—Lead or Lead Lined

Accurate Sheet Metal & Mfg Works., 2336–38 Milwaukee Ave., Chicago 47, Ill.
AMERAY CORP., Route #46, Kenvil, N. J. ADV. PG. 123
Atomic Energy of Canada, Ltd., Commercial Products Div., P. O. Box 93, Ottawa, Ontario, Canada
ATOMIC RESEARCH LABORATORY, 2633 Santa Monica Blvd., Santa Monica, Calif. ADV. PG. 142
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 10
BLICKMAN, INC., S., 7900 Gregory Ave., Weehawken, N. J. ADV. PG. 32
Cooper Co., D. C., 1457 S. Michigan Ave., Chicago, Ill.
Daylite Vacuum Products Co., 5207 N. Milwaukee Ave., Chicago 30, Ill.
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
Division Lead Co., 7742 W. 61st Place, Summit, Ill.
EKCO ELECTRONICS LTD., EKCO WORKS, Southend-on Sea, Essex, England. ADV. PG. 127
Falk & Co., Ltd., M., 5 Victoria St., London S.W. 1, England
FARREL-BIRMINGHAM CO., INC., Ansonia, Conn. ADV. PG. 111
Federated Metals Div., American Smelting & Refining Co., 120 Broadway, New York 5, N. Y.
International Pump & Machine Works, 11–13 Governor St., Newark 2, N. J.
Isotope Accessories Co., Box 5458, Philadelphia 43, Pa.
Isotope Specialties Co., 3816 San Fernando Rd., Glendale, Calif.
Knapp Mills Inc., 23–15 Borden Ave., Long Island City 1, N. Y.
LERMAC INC., 5303 Adeline St., Oakland, Calif. ADV. PG. 114
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
NATIONAL LEAD CO., 111 Broadway, New York 6, N. Y. ADV. PG. 27
Panta Instruments Ltd., 26, Savage Gardens, London, E.C. 3, England
Radium Chemical Co., 161 E. 42nd St., New York 17, N. Y.
RAY-PROOF CORP., 513 W. 54th St., New York, N. Y. ADV. PG. 22
Technical Operations, Inc., 6 Schouler Court, Arlington 74, Mass.
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
U. S. Stoneware Co., Akron 9, Ohio
X-Ray Dept. of General Electric Co., 4855 Electric Ave., Milwaukee, Wis.

CONTAINERS—Metal

Accurate Sheet Metal & Mfg. Works, 2336–38 Milwaukee Ave., Chicago 47, Ill.
Aluminum Co. of America, Alcoa Bldg., Pittsburgh 19, Pa.
BLICKMAN, INC., S., 7900 Gregory Ave., Weehawken, N. J. ADV. PG. 32
Bud Radio, Inc., 2118 E. 55th St., Cleveland 3, Ohio
Consolidated Siphon Supply Co., 24 Wooster St., New York, N. Y.
Cooper Co., D. C., 1467 S. Michigan Ave., Chicago, Ill.
Daylite Vacuum Products Co., 5207 N. Milwaukee Ave., Chicago 30, Ill.
Durlach Can & Iron Works, 168 7th, Brooklyn, N. Y.
Electric Steel Foundry Co., 2141 N.W. 25th Ave., Portland 10, Ore.
Emerson-Sack-Warner Corp., 150 Dorchester Ave., Boston 27, Mass.
FARREL-BIRMINGHAM CO., INC., Ansonia, Conn. ADV. PG. 111
Heldor Mfg. Corp., 238 Lewis Ave., Paterson, N. J.
Henry & Miller Industries, 45 Rockefeller Plaza, New York 20, N. Y.
Karp Metal Products Co., Div. of H & B Machine Co., 211 63rd St., Brooklyn 20, N. Y.
Keller Products, Inc., Manchester, N. H.
Knapp Mills Inc., 23–15 Borden Ave., Long Island City, N. Y.
Linde Air Products Co., Div. of Union Carbide & Carbon Corp., 30 E. 42nd St., New York 17, N. Y.

CONTAINERS—Plastic

Ace Glass, Inc., Vineland, N. J.
Atlas Mineral Products Co., 131 Norman St., Mertztown, Pa.
Daylite Vacuum Products Co., 5207 N. Milwaukee Ave., Chicago 30, Ill.
Electro Chemical Supply & Engineering Co., 750 Broad St., Emmaus, Pa.
Emerson & Cuming, Inc., 869 Washington St., Canton, Mass.
Erie Resistor Corp., 644 W. 12th St., Erie, Pa.
General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.
Gits Molding Corp., 4600 W. Huron St., Chicago 44, Ill.
Goodyear Aircraft Corp., 1210 Massillion Rd., Akron 15, Ohio
Keller Products, Inc., Manchester, N. H.
Knapp Mills, Inc., 23–15 Borden Ave., Long Island City 1, N. Y.
National Vulcanized Fibre Co., Wilmington 99, Del.
Shamban & Co., W. S., 11617 W. Jefferson Blvd., Culver City, Calif.
Spaulding Fibre Co., Inc., 310 Wheeler St., Tonawanda, N. Y.
Stillman Rubber Co., 5811 Marilyn Ave., Culver City, Calif.
Wheaton Co., T. C., Millville, N. J.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

CONTAINERS—Stoneware

General Ceramics & Steatite Corp., 250 Crows Mill Rd., Keasbey, N. J.
Knight, Maurice A., 171 Kelly Ave., Akron, Ohio
U. S. Stoneware Co., Akron, Ohio

CONTROLLERS—Proportioning

Bristol Co., Waterbury 20, Conn.
Clifford Mfg. Co., Grove St., Waltham, Mass.
Eclipse-Pioneer Div., Bendix Aviation Corp., Teterboro, N. J.
EKCO ELECTRONICS LTD., EKCO WORKS, Southend-on-Sea, Essex, England. ADV. PG. 127
Fenwal, Inc., Ashland, Mass.
Fielden Instrument Div., Robertshaw-Fulton Controls Co., 2920 N. 4th St., Philadelphia 33, Pa.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
FORD INSTRUMENT CO., DIV. OF SPERRY CORP., 31–10 Thomson Ave., Long Island City, N. Y. ADV. PG. 105
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
General Controls Co., Glendale 1, Calif.
Hagan Corp., 323 Fourth Ave., Pittsburgh 22, Pa.
Industrial Controls, Inc., 525 N. Noble St., Chicago 22, Ill.
Industrial Instruments, Inc., 89 Commerce Rd., Cedar Grove, N. J.
Johnson Service Co., 50 E. Michigan St., Milwaukee 2, Wis.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 131
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Maxson Corp., W. L., 460 W. 34th St., New York 1, N. Y.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Back Cover
Partlow Corp., 2 Campion Rd., New Hartford, N. Y.
Powers Regulator Co., The, 3400 Oakton, Skokie, Ill.
Pratt & Whitney Div., Niles-Bement-Pond Co., West Hartford 1, Conn.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Thermo Electric Mfg. Co., 465 Huff, Dubuque, Iowa
Ultrasonic Corp., 640 Memorial Drive, Cambridge 39, Mass.
Wheelco Instruments Div., Barber-Colman Co., Rockford, Ill.

CONTROLS—Counting & Sorting

Airmec Ltd., High Wycombe, Buckinghamshire, England
ATOMIC INSTRUMENT CO., 84 Massachusetts Ave., Cambridge 39, Mass. ADV. PG. Inside Back Cover
Autotron Co., Box 722, Danville, Ill.
Barnes Development Co., 213 W. Baltimore Pike, Lansdowne, Pa.
BENDIX AVIATION CORP., CINCINNATI DIV., 203 W. Third St., Cincinnati 2, Ohio. ADV. PG. 14
BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2220 Wright Ave., Richmond, Calif. ADV. PG. 121
Bristol Co., Waterbury 20, Conn.
Cinema-Television Ltd., Worsley Bridge Rd., London, S. E. 26, England
Daystrom Instrument Co., Archbald, Pa.
Electrodyne Co., Endicott St., Norwood, Mass.
Exact Weight Scale Co., 944 W. Fifth Ave., Columbus 8, Ohio
Federal Telephone & Radio Co., A Div. of International Telephone & Telegraph Corp., 100 Kingsland Rd., Clifton, N. J.
Fielden Instrument Div., Robertshaw-Fulton Controls Co., 2920 N. 4th St., Philadelphia 33, Pa.
FORD INSTRUMENT CO., DIV. OF SPERRY CORP., 31–10 Thomson Ave., Long Island City, N. Y. ADV. PG. 105
GENERAL MILLS, INC., MECHANICAL DIV., 1620 Central Ave., N. E., Minneapolis, Minn. ADV. PG. 101
Industrial Controls, Inc., 525 N. Noble St., Chicago 22, Ill.
Industrial Electronics, Inc., 8060 Wheeler St., Detroit 10, Mich.
Infra Electronic Corp., Roseland, N. J.
Larson Instrument Co., 24 Orchard St., Tarrytown, N. Y.
Peschel Electronics, Inc., 13 Garden St., New Rochelle, N. Y.
Photobell Co., 116 Nassau St., New York 7, N. Y.
Photoswitch Div., Electronic Corp. of America, 77 Broadway, Cambridge 42, Mass.
Potter Instrument Co., 115 Cutter Mill Rd., Great Neck, N. Y.
Pratt & Whitney Div., Niles-Bement-Pond Co., West Hartford 1, Conn.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
Remington Rand Inc., Engineering Research Associates Div., 1902 W. Minnehaha Ave., St. Paul W4, Minn.
Research Electronics Laboratory, Roslyn, Pa.
Standard Electronics Research Corp., 2 East End Ave., New York 21, N. Y.
Taller & Cooper Inc., 75 Front St., Brooklyn, N. Y.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Trott Electronics Co., 1944 Clinton Ave., N., Rochester 21, N. Y.
Ultrasonic Corp., 640 Memorial Drive, Cambridge 39, Mass.
Veeder-Root, Inc., 20 Sargeant St., Hartford 2, Conn.
Vickers Electric Division, Vickers, Inc., 1840 Locust St., St. Louis 3, Mo.
Walkirt Co., 145 W. Hazel, Inglewood, Calif.

CONTROLS—Electromagnetic

Automatic Switch Co., 391 Lakeside Ave., Orange, N. J.

CONTROLS—Film Thickness

Automatic Temperature Control Co., Inc., 5206 Pulaski Ave., Philadelphia 44, Pa.
EKCO ELECTRONICS LTD., EKCO WORKS, Southend-on-Sea, Essex, England. ADV. PG. 127
Fielden Instrument Div., Robertshaw-Fulton Controls Co., 2920 N. 4th St., Philadelphia 33, Pa.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Industrial Controls, Inc., 525 N. Noble St., Chicago 22, Ill.
Industrial Nucleonics Corp., 1205 Chesapeake Ave., Columbus 12, Ohio
Infra Electronic Corp., Roseland, N. J.
Instrument Development Labs., Inc., 163 Highland Ave., Needham Heights, Mass.
Ohmart Corp., 2236 Bagen St., P. O. Box 67, Sta. B, Cincinnati 22, Ohio
Photobell Co., 116 Nassau St., New York 7, N. Y.
Pratt & Whitney Div., Niles-Bement-Pond Co., West Hartford 1, Conn.
Standard Electronics Research Corp., 2 East End Ave., New York 21, N. Y.
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23

CONTROLS—Fluid Flow

Air Associates, Inc., Teterboro, N. J.
Askania Regulator Co., 240 E. Ontario St., Chicago 11, Ill.
Associated Valve & Engineering Co., 1150 W. Marquette Rd., Chicago 21, Ill.
ATOMIC INSTRUMENT CO., 84 Massachusetts Ave., Cambridge 39, Mass. ADV. PG. Inside Back Cover
Automatic Switch Co., 391 Lakeside Ave., Orange, N. J.
Automatic Temperature Control Co., Inc., 5206 Pulaski Ave., Philadelphia 44, Pa.
B-I-F Industries, Inc., P. O. Box 1342, Providence, R. I.
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 10
BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121
Bristol Co., Waterbury 20, Conn.
Brooks Rotameter Co., Box A-1347, Lansdale, Pa.
Builders-Providence, Inc., Div. of B-I-F Industries, Inc., 530 Harris Ave., Providence 1, R. I.
Caltron Co., 1406 S. Hobart Blvd., Los Angeles 6, Calif.
Conoflow Corp., 2100 Arch St., Philadelphia 3, Pa.
Consolidated Siphon Supply Co., 24 Wooster St., New York, N. Y.
Cutler-Hammer, Inc., 412 N. 12th St., Milwaukee 1, Wis.
Daylite Vacuum Products Co., 5207 N. Milwaukee Ave., Chicago 30, Ill.
Denison Engineering Co., 1160 Dublin Road, Columbus 16, Ohio
Eclipse-Pioneer Div., Bendix Aviation Corp., Teterboro, N. J.
Federal Telephone & Radio Co., A Div. of International Telephone & Telegraph Corp., 100 Kingsland Rd., Clifton, N. J.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Foster Wheeler Corp., 165 Broadway, New York 6, N. Y.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Fulton Sylphon Division, Robertshaw-Fulton Controls Co., Knoxville 1, Tenn.
General Controls Co., Glendale 1, Calif.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Hagan Corp., 323 Fourth Ave., Pittsburgh 22, Pa.
Hays Corp., Michigan City, Ind.
Industrial Controls, Inc., 525 N. Noble St., Chicago 22, Ill.
Infra Electronic Corp., Roseland, N. J.
Johnson Corp., 809 Wood St., Three Rivers, Mich.
Lapp Insulator Co., Inc., 31 Gilbert St., LeRoy, N. Y.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Maxson Corp., W. L., 460 W. 34th St., New York 1, N. Y.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Back Cover
Nuclear Research Corp., Southampton, Pa.
Paraplegics Mfg. Co., Inc., 10068 Franklin Ave., Franklin Park, Ill.
Phillips Control Corp., 59 W. Washington St., Joliet, Ill.
Roy Co., Milton, 1300 E. Mermaid Lane, Philadelphia 19, Pa.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
Sunshine Scientific Instrument, 180–12 Grant Ave., Philadelphia 15, Pa.
Swartwout Co., 18547 Euclid Ave., Cleveland, Ohio
Taller & Cooper Inc., 75 Front St., Brooklyn, N. Y.
Taylor Instrument Companies, 95 Ames St., Rochester, N. Y.
Victory Engineering Corp., Springfield Rd., Union, N. J.

CONTROLS—Humidity

American Instrument Co., Inc., 8030 Georgia Ave., Silver Spring, Md.
Bowser Technical Refrigeration Div. of Bowser, Inc., Terryville, Conn.
Bristol Co., Waterbury 20, Conn.
Daylite Vacuum Products Co., 5207 N. Milwaukee Ave., Chicago 30, Ill.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Friez Instrument Div. of Bendix Aviation Corp., 1454 Taylor Ave., Baltimore 4, Md.
General Controls Co., Glendale 1, Calif.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Gits Molding Corp., 4600 W. Huron St., Chicago 44, Ill.
Industrial Controls, Inc., 525 N. Noble St., Chicago 22, Ill.
Industrial Engineering & Equipment Co., 711 S. Theresa, St. Louis 3, Mo.
Infra Electronic Corp., Roseland, N. J.
Johnson Service Co., 507 E. Michigan St., Milwaukee 2, Wis.
LENNARD CO., INC., P. M., 671 Bergen St., Brooklyn 38, N. Y. ADV. PG. 26
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave. S., Minneapolis, Minn.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Back Cover
Photobell Co., 116 Nassau St., New York 7, N. Y.
Powers Regulator Co., The, 3400 Oakton, Skokie, Ill.
Taller & Cooper Inc., 75 Front St., Brooklyn, N. Y.
Taylor Instrument Companies, 95 Ames St., Rochester, N. Y.
Thermo Instrument Co., P. O. Box 336, 1310 Old County Rd., Belmont, Calif.
U. S. Gauge Div., American Machine and Metals, Inc., Sellersville, Pa.
Victory Engineering Corp., Springfield Rd., Union, N. J.
Weston Electrical Instrument Corp., 614 Frelinghuysen Ave., Newark 5, N. J.
Worner Electronic Devices, Rankin, Ill.

CONTROLS—Indicating, Millivoltmeter

Assembly Products, Inc., Chagrin Falls 6, Ohio
Bourns Laboratories, 6135 Magnolia Blvd., Riverside, Calif.
Bristol Co., Waterbury 20, Conn.
Chatham Electronics Corp., Livingston, N. J.
Doelcam Corp., 1400 Soldiers Field Rd., Boston 35, Mass.
Engelhard, Inc., Charles, 850 Passaic St., East Newark, N. J.
Fielden Instrument Div., Robertshaw-Fulton Controls Co., 2920 N. 4th St., Philadelphia 33, Pa.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Industrial Controls, Inc., 525 N. Noble St., Chicago 22, Ill.
Infra Electronic Corp., Roseland, N. J.
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., S., Minneapolis, Minn.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Back Cover
Phaostron Co., 151 Pasadena Ave., South Pasadena, Calif.
Telecomputing Corp., 133 E. Santa Anita Ave., Burbank, Calif.
Thwing-Albert Instrument Co., Penn St. & Pulaski Ave., Philadelphia 44, Pa.
Weston Electrical Instrument Corp., 614 Frelinghuysen Ave., Newark 5, N. J.
Wheelco Instruments Div., Barber-Colman Co., Rockford, Ill.

CONTROLS—Indicating, Millivoltmeter, Pyrometer

Assembly Products, Inc., Chagrin Falls 6, Ohio
Bristol Co., Waterbury 20, Conn.
Engelhard, Inc., Charles, 850 Passaic St., East Newark, N. J.
Fielden Instrument Div., Robertshaw-Fulton Controls Co., 2920 N. 4th St., Philadelphia 33, Pa.
Foxboro Co., Neponset Ave., Foxboro, Mass.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Industrial Controls, Inc., 525 N. Noble St., Chicago 22, Ill.
Infra Electronic Corp., Roseland, N. J.

MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Back Cover
Thwing-Albert Instrument Co., Penn St., & Pulaski Ave., Philadelphia 44, Pa.
Weston Electrical Instrument Corp., 614 Frelinghuysen Ave., Newark 5, N. J.
Wheelco Instruments Div., Barber-Colman Co., Rockford, Ill.

CONTROLS—Liquid Level

Air Associates, Inc., Teterboro, N. J.
ALLEN-BRADLEY CO., 136 W. Greenfield Ave., Milwaukee 4, Wis. ADV. PG. 113
Askania Regulator Co., 240 E. Ontario St., Chicago 11, Ill.
Associated Valve & Engineering Co., 1150 W. Marquette Rd., Chicago 21, Ill.
Atomic Energy of Canada, Ltd., Commercial Products Div., P. O. Box 93, Ottawa, Ontario, Canada
Automatic Temperature Control Co., Inc., 5206 Pulaski Ave., Philadelphia 44, Pa.
Avien, Inc., 58–15 Northern Blvd., Woodside 77, N. Y.
B-I-F Industries, Inc., P. O. Box 1342, Providence, R. I.
BENDIX AVIATION CORP., CINCINNATI DIV., 203 W. Third St., Cincinnati 2, Ohio ADV. PG. 14
BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121
Bogue Electric Mfg. Co., 52 Iowa Ave., Paterson 3, N. J.
Bristol Co., Waterbury 20, Conn.
Builders-Providence, Inc., Div. of B-I-F Industries, Inc., 530 Harris Ave., Providence 1, R. I.
Clark Controller Co., 1146 E. 152nd St., Cleveland 10, Ohio
Colloid Equipment Co., Inc., 19 Murray St., New York 7, N. Y.
Conoflow Corp., 2100 Arch St., Philadelphia 3, Pa.
Consolidated Siphon Supply Co., Inc., 24 Wooster St., New York, N. Y.
Cutler-Hammer, Inc., 412 N. 12th St., Milwaukee 1, Wis.
Daylite Vacuum Products Co., 5207 N. Milwaukee Ave., Chicago 30, Ill.
Eclipse-Pioneer Div., Bendix Aviation Corp., Teterboro, N. J.
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
Farmer Electric Co., 21 Mossfield Rd., Waban 68, Mass.
Federal Telephone & Radio Co., A Div. of International Telephone & Telegraph Corp., 100 Kingsland Rd., Clifton, N. J.
Fielden Instrument Div., Robertshaw-Fulton Controls Co., 2920 N. 4th St., Philadelphia 33, Pa.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
FORD INSTRUMENT CO., DIV. OF SPERRY CORP., 31–10 Thomson Ave., Long Island City, N. Y. ADV. PG. 105
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Friez Instrument Div. of Bendix Aviation Corp., 1454 Taylor Ave., Baltimore 4, Md.
Fulton Sylphon Division, Robertshaw-Fulton Controls Co., Knoxville 1, Tenn.
General Controls Co., Glendale 1, Calif.
GENERAL ELECTRIC CO., ATOMIC POWER EQUIPMENT COMPONENT, 2900 Campbell Ave., Schenectady 6, N. Y. ADV. PG. 2–6
Guardian Electric Co., 1625 W. Walnut St., Chicago 12, Ill.
Hagan Corp., 323 Fourth Ave., Pittsburgh 22, Pa.
Industrial Controls, Inc., 525 N. Noble St., Chicago 22, Ill.
Industrial Engineering & Equipment Co., 711 S. Theresa, St. Louis 3, Mo.
Infilco, Inc., P. O. Box 5033, Tucson, Ariz.
Infra Electronic Corp., Roseland, N. J.
Interelectronics Corp., 2432 Grand Concourse, New York 58, N. Y.
Johnson Corp., 809 Wood St., Three Rivers, Mich.
JORDAN ELECTRONIC MFG. CO., INC., Union Bldg., 119 E. Union St., Pasadena 1, Calif. ADV. PG. 129, 136
Kieley & Mueller Co., Inc., Genung St., Middletown, N. Y.
Larson Instrument Co., 24 Orchard St., Tarrytown, N. Y.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 131
Leslie Co., 299 Grant Ave., Lyndhurst, N. J.
Lumenite Electric Co., 407 S. Dearborn St., Chicago 5, Ill.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Mercoid Corp., 4201 Belmont Ave., Chicago 41, Ill.
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave. S., Minneapolis, Minn.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Back Cover
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV PG. 147
Nuclear Research Corp., Southampton, Pa.
Ohmart Corp., 2236 Bogen St., P. O. Box 67, Sta. B, Cincinnati 22, Ohio
Phillips Control Corp., 59 W. Washington St., Joliet, Ill.
Photobell Co., 116 Nassau St., New York 7, N. Y.
Photoswitch Div., Electronic Corp. of America, 77 Broadway, Cambridge 42, Mass.
Powers Regulator Co., The, 3400 Oakton, Skokie, Ill.
Precision Radiation Instruments, Inc., 2235 S. La Brea Ave., Los Angeles 16, Calif.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
Radio Sonic Corp., 32 W. 22nd St., New York 10, N. Y.
Servo-Tek Products Corp., 1086 Goffle Rd., Hawthorne, N. J.
Simmonds Aerocessories Inc., 105 White Plains Rd., Tarrytown, N. Y.
Swartwout Co., 18547 Euclid Ave., Cleveland, Ohio
Taller & Cooper Inc., 75 Front St., Brooklyn, N. Y.
Taylor Instrument Companies, 95 Ames St., Rochester, N. Y.
Thermo Instrument Co., P. O. Box 336, 1310 Old County Rd., Belmont, Calif.
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
Trimount Instrument Co., 3119 W. Lake St., Chicago 12, Ill.
U. S. Gauge Div., American Machine and Metals, Inc., Sellersville, Pa.
Victory Engineering Corp., Springfield Rd., Union, N. J.
Worner Electronic Devices, Rankin, Ill.
X-Ray Dept. of General Electric Co., 4855 Electric Ave., Milwaukee, Wis.
York Corp., York, Pa.

CONTROLS—Pressure

Air Associates, Inc., Teterboro, N. J.
Askania Regulator Co., 240 E. Ontario St., Chicago 11, Ill.
Associated Valve & Engineering Co., 1150 W. Marquette Rd., Chicago 21, Ill.
Automatic Temperature Control Co., Inc., 5206 Pulaski Ave., Philadelphia 44, Pa.
BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121
Bogue Electric Mfg. Co., 52 Iowa Ave., Paterson 3, N. J.
Bourns Laboratories, 6135 Magnolia Blvd., Riverside, Calif.
Bristol Co., Waterbury 20, Conn.
Clark Controller Co., 1146 E. 152nd St., Cleveland 10, Ohio
Connecticut Telephone & Electric Corp., 70 Brittania St., Meriden, Conn.
Conoflow Corp., 2100 Arch St., Philadelphia 3, Pa.
Cutler-Hammer Inc., 412 N. 12th St., Milwaukee 1, Wis.
Denison Engineering Co., 1160 Dublin Road, Columbus 16, Ohio
Dietz Co., Henry G., 12–16 Astoria Blvd., Long Island City 2, N. Y.
Eclipse-Pioneer Div., Bendix Aviation Corp., Teterboro, N. J.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
FORD INSTRUMENT CO., DIV. OF SPERRY CORP., 31–10 Thomson Ave., Long Island City, N. Y. ADV. PG. 105
Foster Wheeler Corp., 165 Broadway, New York 6, N. Y.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Friez Instrument Div. of Bendix Aviation Corp., 1454 Taylor Ave., Baltimore 4, Md.
Fulton Sylphon Division, Robertshaw-Fulton Controls Co., Knoxville 1, Tenn.
Gas & Oil Industry Laboratories, Inc., 2 Paine Ave., Irvington 11, N. J.
General Controls Co., Glendale 1, Calif.
GENERAL ELECTRIC CO., ATOMIC POWER EQUIPMENT COMPONENT, 2900 Campbell Ave., Schenectady 6, N. Y. ADV. PG. 2–6
Giannini & Co., G. M., Pasadena 1, Calif.
Greiner Co., Emil, 26 N. Moore St., New York 13, N. Y.
Hagan Corp., 323 Fourth Ave., Pittsburgh 22, Pa.
Hammel-Dahl Co., 175 Post Rd., Providence 5, R. I.
Hannifin Corp., 501 S. Wolf Rd., Des Plaines, Ill.
Hays Corp., Michigan City, Ind.
Henry & Miller Industries, 45 Rockefeller Plaza, New York 20, N. Y.
Industrial Controls, Inc., 525 N. Noble St., Chicago 22, Ill.
Industrial Electronics, Inc., 8060 Wheeler St., Detroit 10, Mich.
Infilco, Inc., P. O. Box 5033, Tucson, Ariz.
Infra Electronic Corp., Roseland, N. J.
Johnson Service Co., 507 E. Michigan St., Milwaukee 2, Wis.
Kieley & Mueller Co., Inc., Genung St., Middletown, N. Y.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 131
Leslie Co., 299 Grant Ave., Lyndhurst, N. J.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Mercoid Corp., 4201 Belmont Ave., Chicago 41, Ill.
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave. S., Minneapolis, Minn.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Back Cover
Paragon Electric Co., Two Rivers, Wis.
Powers Regulator Co., The, 3400 Oakton, Skokie, Ill.
Swartwout Co., 18457 Euclid Ave., Cleveland, Ohio
Taller & Cooper Inc., 75 Front St., Brooklyn, N. Y.
Taylor Instrument Companies, 95 Ames St., Rochester, N. Y.
Trans-Sonics, Inc., Bedford Airport, Bedford, Mass.
U. S. Gauge Div., American Machine and Metals, Inc., Sellersville, Pa.
Wallace & Tiernan Inc., Belleville 9, N. J.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.
Weston Electrical Instrument Corp., 614 Frelinghuysen Ave., Newark 5, N. J.
York Corp., York, Pa.

CONTROLS—Remote

Air Associates, Inc., Teterboro, N. J.
American Machine & Foundry Co., Atomic Energy Dept., 261 Madison Ave., New York 16, N. Y.
Askania Regulator Co., 240 E. Ontario St., Chicago 11, Ill.
Associated Valve & Engineering Co., 1150 W. Marquette Rd., Chicago 21, Ill.
Automatic Switch Co., 391 Lakeside Ave., Orange, N. J.
Automatic Temperature Control Co., Inc., 5206 Pulaski Ave., Philadelphia 44, Pa.
Avion Instrument Corp., Div. of American Car & Foundry Co., 295 State Highway #17, Paramus, N. J.
Barnes Co., W. F. & John, 201 S. Water St., Rockford, Ill.
B-I-F Industries, Inc., P. O. Box 1342, Providence, R. I.
BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121
Bogue Electric Mfg. Co., 52 Iowa Ave., Paterson 3, N. J.
Bristol Co., Waterbury 20, Conn.
Brooks Rotameter Co., Box A-1347, Lansdale, Pa.
Builders-Providence, Inc., Div. of B-I-F Industries, Inc., 530 Harris Ave., Providence 1, R. I.
C.G.S. Laboratories, Inc., 391 Ludlow St., Stamford, Conn.
Collins Radio Co., Cedar Rapids, Iowa
Conoflow Corp., 2100 Arch St., Philadelphia 3, Pa.
Cubic Corp., 2841 Canon St., San Diego 6, Calif.
Cutler-Hammer, Inc., 412 N. 12th St., Milwaukee 1, Wis.
Dage Electronics Div., Thompson Products, Inc., 69 N. Second St., Beech Grove, Ind.
Doelcam Corp., 1400 Soldiers Field Rd., Boston 35, Mass.
Eclipse-Pioneer Div., Bendix Aviation Corp., Teterboro, N. J.
Electronic Associates, Inc., Long Branch, N. J.
Elm Laboratories, 18 South Broadway, Dobbs Ferry, N. Y.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
FORD INSTRUMENT CO., DIV. OF SPERRY CORP., 31–10 Thomson Ave., Long Island City, N. Y. ADV. PG. 105
Foster Wheeler Corp., 165 Broadway, New York 6, N. Y.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
General Controls Co., Glendale 1, Calif.
GENERAL ELECTRIC CO., ATOMIC POWER EQUIPMENT COMPONENT, 2900 Campbell Ave., Schenectady 6, N. Y. ADV. PG. 2–6
GENERAL MILLS, INC., MECHANICAL DIV., 1620 Central Ave., N. E., Minneapolis, Minn. ADV. PG. 101
Giannini & Co., G. M., Pasadena 1, Calif.
Hagan Corp., 323 Fourth Ave., Pittsburgh 22, Pa.
Hammarlund Mfg., Co., 460 W. 34th St., New York 1, N. Y.
Hannifin Corp., 501 S. Wolf Rd., Des Plaines, Ill.
Hycon Mfg. Co., 2961 E. Colorado St., Pasadena 8, Calif.
Industrial Controls, Inc., 525 N. Noble St., Chicago 22, Ill.
Infra Electronic Corp., Roseland, N. J.
Isotope Accessories Co., Box 5458, Philadelphia 43, Pa.
Ketay Instrument Corp., 555 Broadway, New York 12, N. Y.
Kupfrian Mfg., Corp., 395 State St., Binghamton, N. Y.
L & O Research & Development Corp., 134 N. Wayne Ave., Wayne, Pa.
Larson Instrument Co., 24 Orchard St., Tarrytown, N. Y.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 131
Lumenite Electric Co., 407 S. Dearborn St., Chicago 5, Ill.
Magnetic Amplifiers, Inc., 632 Tinton Ave., New York 55, N. Y.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Mercoid Corp., 4201 Belmont Ave., Chicago 41, Ill.
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave. S., Minneapolis, Minn.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Back Cover
Motorola, Inc., Communications & Electronics Div., 4545 W. Augusta Blvd., Chicago 51, Ill.

Naer Corp., 2301 S. Purdue Ave., West Los Angeles, Calif.
North American Philips Co., Inc., 750 S. Fulton Ave., Mt. Vernon, N. Y.
Nuclear Research Corp., Southampton, Pa.
Pacific Division, Bendix Aviation Corp., 11600 Sherman Way, North Hollywood, Calif.
Pantatron Ltd., Teleflex Works, High Rd., Chadwell Heath, Essex, England
Phillips Control Corp., 59 W. Washington St., Joliet, Ill.
Powers Regulator Co., The, 3400 Oakton, Skokie, Ill.
RAPID ELECTRIC CO., 2881 Middletown Rd., New York, N. Y. ADV. PG. 124
Servo Corp. of America, 2020 Jericho Turnpike, New Hyde Park, N. Y.
Servomechanisms, Inc., 500 Franklin Ave., Garden City, N. Y.
Servospeed Div., Electro Devices, Inc., 4 Godwin Ave., Paterson 1, N. J.
Servo-Tek Products Corp., 1086 Goffle Rd., Hawthorne, N. J.
Standard Electronics Research Corp., 2 East End Ave., New York 21, N. Y.
Sunshine Scientific Instrument, 180-12 Grant Ave., Philadelphia 15, Pa.
Swartwout Co., 18547 Euclid Ave., Cleveland, Ohio
Taller & Cooper Inc., 75 Front St., Brooklyn, N. Y.
Taylor Instrument Companies, 95 Ames St., Rochester, N. Y.
Telectro Industries Corp., 36-16 37th St., Long Island City 1, N. Y.
Ultrasonic Corp., 640 Memorial Drive, Cambridge 39, Mass.
Vickers Electric Division, Vickers, Inc., 1840 Locust St., St. Louis 3, Mo.
Victory Engineering Corp., Springfield Rd., Union, N. J.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.
Weston Electrical Instrument Corp., 614 Frelinghuysen Ave., Newark 5, N. J.
Wheelco Instruments Div., Barber-Colman Co., Rockford, Ill.
Worner Electronic Devices, Rankin, Ill.

CONTROLS—Servo

Ahrendt Instrument Co., 4910 Calvert Rd., College Park, Md.
Air Associates, Inc., Teterboro, N. J.
American Machine & Foundry Co., Atomic Energy Dept., 261 Madison Ave., New York 16, N. Y.
Arma Corp., Old Country Rd., Garden City, N. Y.
Askania Regulator Co., 240 E. Ontario St., Chicago 11, Ill.
Associated Engineering Corp. of Boston, 65 Kent St., Brookline 46, Mass.
Audio Instrument Co., Inc., 133 W. 14th St., New York 11, N. Y.
Automatic Temperature Control Co., Inc., 5206 Pulaski Ave., Philadelphia 44, Pa.
Avion Instrument Corp., Div. of American Car & Foundry Co., 295 State Highway #17, Paramus, N. J.
Belock Instrument Corp., 13-11 111th St., College Point, N. Y.
Bill Jack Scientific Instrument Co., P. O. Box C-39, Solana Beach, Calif.
Bogue Electric Mfg. Co., 52 Iowa Ave., Paterson 3, N. J.
Borg Corp., George W., Borg Equipment Div., Janesville, Wis.
Bristol Co., Waterbury 20, Conn.
Clark Controller Co., 1146 E. 152nd St., Cleveland 10, Ohio
Clifford Mfg. Co., Grove St., Waltham, Mass.
Clifton Precision Products Co., Broadway & Maple Ave., Clifton Heights, Pa.
Computing Devices of Canada, Ltd., P. O. Box 508, Ottawa 4, Ontario, Canada
Control Electronics Co., Inc., 1925 New York Ave., Huntington Station, N. Y.
Cubic Corp., 2841 Canon St., San Diego 6, Calif.
CURTISS-WRIGHT CO., ELECTRONICS DIV., Carlstadt, N. J. ADV. PG. 31
Cutler-Hammer, Inc., 412 N. 12th St., Milwaukee 1, Wis.
Dage Electronics Div., Thompson Products, Inc., 69 N. Second St., Beech Grove, Ind.
Dalmo Victor Co., 1414 El Camino Real, San Carlos, Calif.
Daystrom Instrument Co., Archbald, Pa.
Doelcam Corp., 1400 Soldiers Field Rd., Boston 35, Mass.
Eclipse-Pioneer Div., Bendix Aviation Corp., Teterboro, N. J.
Electronic Associates, Inc., Long Branch, N. J.
Empire State Laboratories, Inc., 2608 Merrick Rd., Bellmore, N. Y.
Federal Telephone & Radio Co., A Div. of International Telephone & Telegraph Corp., 100 Kingsland Rd., Clifton, N. J.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
FORD INSTRUMENT CO., DIV. OF SPERRY CORP., 31-10 Thomson Ave., Long Island City, N. Y. ADV. PG. 105
Foster Wheeler Corp., 165 Broadway, New York 6, N. Y.
GENERAL ELECTRIC CO., ATOMIC POWER EQUIPMENT COMPONENT, 2900 Campbell Ave., Schenectady 6, N. Y. ADV. PG. 2-6
GENERAL MILLS, INC., MECHANICAL DIV., 1620 Central Ave., N. E., Minneapolis, Minn. ADV. PG. 101
General Precision Laboratory, Inc., Pleasantville, N. Y.
Giannini & Co., G. M., Pasadena 1, Calif.
Gyromechanisms, Inc., Halesite, N. Y.
Hagan Corp., 323 Fourth Ave., Pittsburgh 22, Pa.
Hycon Mfg. Co., 2961 E. Colorado St., Pasadena 8, Calif.
I-T-E Circuit Breaker Co., 19th & Hamilton Sts., Philadelphia 30, Pa.
Industrial Control Co., Straight Path & Arlington Ave., Wyandanch, N. Y.
Industrial Controls, Inc., 525 N. Noble St., Chicago 22, Ill.
Infra Electronic Corp., Roseland, N. J.
Kahn & Co., Inc., 541 Windsor St., Hartford, Conn.
Ketay Instrument Corp., 555 Broadway, New York 12, N. Y.
L & O Research & Development Corp., 134 N. Wayne Ave., Wayne, Pa.
Larson Instrument Co., 24 Orchard St., Tarrytown, N. Y.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 131
Librascope, Inc., 808 Western Ave., Glendale, Calif.
Link Aviation, Inc., Binghamton, N. Y.
Magnavox Co., Components Div., Fort Wayne 4, Ind.
Magnetic Amplifiers, Inc., 632 Tinton Ave., New York 55, N. Y.
Maxson Corp., W. L., 460 W. 34th St., New York 1, N. Y.
Midwestern Geophysical Lab., 3400 S. Harvard, Tulsa, Okla.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Back Cover
Muirhead & Co., Ltd., Beckenham, Kent, England
Naer Corp., 2301 S. Purdue Ave., West Los Angeles, Calif.
North American Philips Co., Inc., 750 S. Fulton Ave., Mt. Vernon, N. Y.
Oster Mfg. Co., John, Avionic Div., 1 Main St., Racine, Wis.
PSC Applied Research Ltd., 1500 O'Connor Drive, Toronto 16, Ontario, Canada
Pacific Division, Bendix Aviation Corp., 11600 Sherman Way, North Hollywood, Calif.
Peschel Electronics, Inc., 13 Garden St., New Rochelle, N. Y.
Polytechnic Research & Development Co., Inc., 202 Tillary St., Brooklyn 1, N. Y.
Press Wireless Laboratories, Inc., 25 Prospect Place, West Newton 65, Mass.
Sanders Associates, Inc., Nashua, N. H.
Sangamo Electric Co., Springfield, Ill.
Servo Corp. of America, 2020 Jericho Turnpike, New Hyde Park, N. Y.
Servomechanisms, Inc., 500 Franklin Ave., Garden City, N. Y.
Servospeed Div., Electro Devices, Inc., 4 Godwin Ave., Paterson 1, N. J.
Servo-Tek Products Corp., 1086 Goffle Rd., Hawthorne, N. J.
Sherron Electronics Co., 1201 Flushing Ave., Brooklyn 6, N. Y.
Taller & Cooper Inc., 75 Front St., Brooklyn, N. Y.
Televiso Corp., 1415 Golf Rd., Des Plaines, Ill.
Trans-Sonics, Inc., Bedford Airport, Bedford, Mass.
Transicoil Corp., 107 Grand St., New York 13, N. Y.
Ultrasonic Corp., 640 Memorial Drive, Cambridge 39, Mass.
Vectron, Inc., 400 Main St., Waltham, Mass.
Vickers Electric Division, Vickers, Inc., 1840 Locust St., St. Louis 3, Mo.

CONTROLS—Specific Gravity

Automatic Temperature Control Co., Inc., 5206 Pulaski Ave., Philadelphia 44, Pa.
Bristol Co., Waterbury 20, Conn.
Conoflow Corp., 2100 Arch St., Philadelphia 3, Pa.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Hagan Corp., 323 Fourth Ave., Pittsburgh 22, Pa.
Hays Corp., Michigan City, Ind.
Industrial Controls, Inc., 525 N. Noble St., Chicago 22, Ill.
Infra Electronic Corp., Roseland, N. J.
Ohmart Corp., 2236 Bogen St., P. O. Box 67, Sta. B, Cincinnati 22, Ohio
Photobell Co., 116 Nassau St., New York 7, N. Y.
Scientific Glass Apparatus Co., Inc., 100 Lakewood Terrace, Bloomfield, N. J.
Taller & Cooper Inc., 75 Front St., Brooklyn, N. Y.
Taylor Instrument Companies, 95 Ames St., Rochester, N. Y.

CONTROLS—Temperature

Air Associates, Inc., Teterboro, N. J.
Airmec Ltd., High Wycombe, Buckinghamshire, England
ALLEN-BRADLEY CO., 136 W. Greenfield Ave., Milwaukee 4, Wis. ADV. PG. 113
American Instrument Co., Inc., 8030 Georgia Ave., Silver Spring, Md.
Assembly Products, Inc., Chagrin Falls 6, Ohio
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 10
BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121
Bogue Electric Mfg. Co., 52 Iowa Ave., Paterson 3, N. J.
Bristol Co., Waterbury 20, Conn.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Clifford Mfg. Co., Grove St., Waltham, Mass.
Connecticut Telephone & Electric Corp., 70 Brittania St., Meriden, Conn.
Conoflow Corp., 2100 Arch St., Philadelphia 3, Pa.
Cooper Co., D. C., 1467 S. Michigan Ave., Chicago, Ill.
Cox & Co., Inc., 115 E. 23rd St., New York 10, N. Y.
Cutler-Hammer Inc., 412 N. 12th St., Milwaukee 1, Wis.
Doelcam Corp., 1400 Soldiers Field Rd., Boston 35, Mass.
Eclipse Fuel Engineering Co., 1100 Buchanan, Rockford, Ill.
Edison Inc., Thomas A., Instrument Div., West Orange, N. J.
Engelhard, Inc., Charles, 850 Passaic St., East Newark, N. J.
Federal Telephone & Radio Co., A Div. of International Telephone & Telegraph Corp., 100 Kingsland Rd., Clifton, N. J.
Fenwal Inc., 120 Pleasant St., Ashland, Mass.
Fielden Instrument Div., Robertshaw-Fulton Controls Co., 2920 N. 4th St., Philadelphia 33, Pa.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Foster Wheeler Corp., 165 Broadway, New York 6, N. Y.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Friez Instrument Div. of Bendix Aviation Corp., 1454 Taylor Ave., Baltimore 4, Md.
Fulton Sylphon Division, Robertshaw-Fulton Controls Co., Knoxville 1, Tenn.
General Controls Co., Glendale 1, Calif.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2-6
Hagan Corp., 323 Fourth Ave., Pittsburgh 22, Pa.
Hammel-Dahl Co., 175 Post Rd., Providence 5, R. I.
Hevi Duty Electric Co., 4212 W. Highland Ave., Milwaukee 1, Wis.
Hycon Mfg. Co., 2961 E. Colorado St., Pasadena 8, Calif.
Industrial Controls, Inc., 525 N. Noble St., Chicago 22, Ill.
Industrial Engineering & Equipment Co., 711 S. Theresa, St. Louis 3, Mo.
Infra Electronic Corp., Roseland, N. J.
Interelectronics Corp., 2432 Grand Concourse, New York 58, N. Y.
Johnson Service Co., 507 E. Michigan St., Milwaukee 2, Wis.
Kybernetes Co., 1100 Raymond Blvd., Newark, N. J.
L & O Research & Development Corp., 134 N. Wayne Ave., Wayne, Pa.
Laboratory Equipment Corp., St. Joseph, Mich.
Larson Instrument Co., 24 Orchard St., Tarrytown, N. Y.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 131
LENNARD CO., INC., P. M., 671 Bergen St., Brooklyn 38, N. Y. ADV. PG. 26
Leslie Co., 299 Grant Ave., Lyndhurst, N. J.
Lindberg Engineering Co., 2450 W. Hubbard St., Chicago 12, Ill.
Macdonald & Co., Inc., W. S., 33 University Rd., Cambridge 38, Mass.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Mercoid Corp., 4201 Belmont Ave., Chicago 41, Ill.
Metals & Controls Corp., General Plate Div., Spencer Thermostat Div., Attleboro, Mass.
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave. S., Minneapolis, Minn.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Back Cover
Moeller Instrument Co., 132nd St. at 89th Ave., Richmond Hill 18, N. Y.
Naer Corp., 2301 S. Purdue Ave., West Los Angeles, Calif.
Paragon Electric Co., Two Rivers, Wis.
Partlow Corp., 2 Campion Rd., New Hartford, N. Y.
Powers Regulator Co., The, 3400 Oakton, Skokie, Ill.
Pyrometer Instrument Co., Inc., Bergenfield, N. J.
Scientific Glass Apparatus Co., Inc., 100 Lakewood Terrace, Bloomfield, N. J.
Standard Electronics Research Corp., 2 East End Ave., New York 21, N. Y.
Stevens Mfg. Co., Inc., 69 S. Walnut St., Mansfield, Ohio
Swartwout Co., 18457 Euclid Ave., Cleveland, Ohio
Taller & Cooper Inc., 75 Front St., Brooklyn, N. Y.
Taylor Instrument Companies, 95 Ames St., Rochester, N. Y.
Thwing-Albert Instrument Co., Penn St. & Pulaski Ave., Philadelphia 44, Pa.
Trans-Sonics, Inc., Bedford Airport, Bedford, Mass.
Ulanet Co., George, 413 Market St., Newark 5, N. J.
Ultrasonic Corp., 640 Memorial Drive, Cambridge 39, Mass.
U. S. Gauge Div., American Machine and Metals, Inc., Sellersville, Pa.
Vickers Electric Division, Vickers, Inc., 1840 Locust St., St. Louis 3, Mo.

Victory Engineering Corp., Springfield Rd., Union, N. J.
West Instrument Corp., 525 N. Noble St., Chicago 22, Ill.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.
Weston Electrical Instrument Corp., 614 Frelinghuysen Ave., Newark 5, N. J.
Wheelco Instruments Div., Barber-Colman Co., Rockford, Ill.

CONTROLS—Temperature, Precision

Airmec Ltd., High Wycombe, Buckinghamshire, England
American Instrument Co., Inc., 8030 Georgia Ave., Silver Spring, Md.
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 10
BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121
Bogue Electric Mfg. Co., 52 Iowa Ave., Paterson 3, N. J.
Bristol Co., Waterbury 20, Conn.
Clifford Mfg. Co., Grove St., Waltham, Mass.
Conoflow Corp., 2100 Arch St., Philadelphia 3, Pa.
Cox & Co., Inc., 115 E. 23rd St., New York 10, N. Y.
Cutler-Hammer, Inc., 412 N. 12th St., Milwaukee 1, Wis.
Doelcam Corp., 1400 Soldiers Field Rd., Boston 35, Mass.
Electro-Physics Co., 287-L Broadway, New York 7, N. Y.
Electrodyne Co., Endicott St., Norwood, Mass.
Falk & Co., Ltd., M., 5 Victoria St., London S. W. 1, England
Federal Telephone & Radio Co., A Div. of International Telephone & Telegraph Corp., 100 Kingsland Rd., Clifton, N. J.
Fenwal Inc., 120 Pleasant St., Ashland, Mass.
Fielden Instrument Div., Robertshaw-Fulton Controls Co., 2920 N. 4th St., Philadelphia 33, Pa.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Friez Instrument Div. of Bendix Aviation Corp., 1454 Taylor Ave., Baltimore 4, Md.
G-V Controls, Inc., 28 Hollywood Plaza, East Orange, N. J.
General Controls Co., Glendale 1, Calif.
Giannini & Co., G. M., Pasadena 1, Calif.
Greiner Co., Emil, 26 N. Moore St., New York 13, N. Y.
Hagan Corp., 323 Fourth Ave., Pittsburgh 22, Pa.
Industrial Controls, Inc., 525 N. Noble St., Chicago 22, Ill.
Infra Electronic Corp., Roseland, N. J.
Interelectronics Corp., 2432 Grand Concourse, New York 58, N. Y.
Johnson Service Co., 507 E. Michigan St., Milwaukee 2, Wis.
Kahl Scientific Instrument Corp., P. O. Box 1166, El Cajon, Calif.
L & O Research & Development Corp., 134 N. Wayne Ave., Wayne, Pa.
Laboratory Equipment Corp., St. Joseph, Mich.
Larson Instrument Co., 24 Orchard St., Tarrytown, N. Y.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 131
LENNARD CO., INC., P. M., 671 Bergen St., Brooklyn 38, N. Y. ADV. PG. 26
Macdonald & Co., Inc., W. S., 33 University Rd., Cambridge 38, Mass.
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave. S., Minneapolis, Minn.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Back Cover
Partlow Corp., 2 Campion Rd., New Hartford, N. Y.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Process & Instruments, 15 Stone Ave., Brooklyn 33, N. Y.
Pyrometer Instrument Co., Inc., Bergenfield, N. J.
Standard Electronics Research Corp., 2 East End Ave., New York 21, N. Y.
Stevens Mfg. Co., Inc., 69 S. Walnut St., Mansfield, Ohio
Thermo Electric Mfg. Co., 465 Huff, Dubuque, Iowa
Thwing-Albert Instrument Co., Penn St. & Pulaski Ave., Philadelphia 44, Pa.
Victory Engineering Corp., Springfield Rd., Union, N. J.
Weston Electrical Instrument Corp., 614 Frelinghuysen Ave., Newark 5, N. J.

CONTROLS—Timing

Adams & Westlake Co., Michigan St., Elkhart, Ind.
ALLEN-BRADLEY CO., 136 W. Greenfield Ave., Milwaukee 4, Wis. ADV. PG. 113
Automatic Switch Co., 391 Lakeside Ave., Orange, N. J.
Automatic Temperature Control Co., Inc., 5206 Pulaski Ave., Philadelphia 44, Pa.
BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121
Bill Jack Scientific Instrument Co., P. O. Box C-39, Solana Beach, Calif.
Bristol Co., Waterbury 20, Conn.
Burroughs Corp., Electronic Instruments Div., 1209 Vine St., Philadelphia 7, Pa.
Cinema-Television Ltd., Worsley Bridge Rd., London, S. E. 26, England
CLEGG LABORATORIES, INC., 142 S. Livingston Ave., Livingston, N. J. ADV. PG. 110
Cramer Co., Inc., The, R. W., Box 13, Centerbrook, Conn.
Cutler-Hammer, Inc., 412 N. 12th St., Milwaukee 1, Wis.
Daystrom Instrument Co., Archbald, Pa.
Dietz Co., Henry G., 12-16 Astoria Blvd., Long Island City 2, N. Y.
Eclipse-Pioneer Div., Bendix Aviation Corp., Teterboro, N. J.
Eisler Engineering Co., 760 S. 13th St., Newark 3, N. J.
EKCO ELECTRONICS, LTD., EKCO WORKS, Southend-on-Sea, Essex, England. ADV. PG. 127
Elm Laboratories, 18 South Broadway, Dobbs Ferry, N. Y.
Farmer Electric Co., 21 Mossfield Rd., Waban 68, Mass.
Federal Telephone & Radio Co., A Div. of International Telephone & Telegraph Corp., 100 Kingsland Rd., Clifton, N. J.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
FORD INSTRUMENT CO., DIV. OF SPERRY CORP., 31-10 Thomson Ave., Long Island City, N. Y. ADV. PG. 105
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
G-V Controls, Inc., 28 Hollywood Plaza, East Orange, N. J.
General Control Company, 1200 Soldiers Field Rd., Boston 34, Mass.
General Controls Co., Glendale 1, Calif.
Hagan Corp., 323 Fourth Ave., Pittsburgh 22, Pa.
Haydon Mfg., Co., Inc., 2400 Elm St., Torrington, Conn.
Hycon Mfg. Co., 2961 E. Colorado St., Pasadena 8, Calif.
Industrial Controls, Inc., 525 N. Noble St., Chicago 22, Ill.
Industrial Timer Corp., 131 Ogden St., Newark 4, N. J.
Infra Electronic Corp., Roseland, N. J.
International Register Co., 2620 W. Washington Blvd., Chicago 12, Ill.
Johnson Service Co., 507 E. Michigan St., Milwaukee 2, Wis.
Kahle Engineering Co., 1307 Seventh St., North Bergen, N. J.
Larson Instrument Co., 24 Orchard St., Tarrytown, N. Y.
Lektra Laboratories, 154 Eleventh Ave., New York 11, N. Y.
Leland Instruments, Ltd., 22-23 Millbank, Westminster, S.W. 1, London, England
Lumenite Electric Co., 407 S. Dearborn St., Chicago 5, Ill.
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave. S., Minneapolis, Minn.
Naer Corp., 2301 S. Purdue Ave., West Los Angeles, Calif.
PSC Applied Research Ltd., 1500 O'Connor Drive, Toronto 16, Ontario, Canada
Pantatron Ltd., Teleflex Works, High Rd., Chadwell Heath, Essex, England
Paragon Electric Co., Two Rivers, Wis.
Partlow Corp., 2 Campion Rd., New Hartford, N. Y.
Peschel Electronics, Inc., 13 Garden St., New Rochelle, N. Y.
Phillips Control Corp., 59 W. Washington St., Joliet, Ill.
Photobell Co., 116 Nassau St., New York 7, N. Y.
Picker X-Ray Corp., 25 S. Broadway, White Plains, N. Y.
Potter Instrument Co., 115 Cutter Mill Rd., Great Neck, N. Y.
Pratt & Whitney Div., Niles-Bement-Pond Co., West Hartford 1, Conn.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
RAPID ELECTRIC CO., 2881 Middletown Rd., New York, N. Y. ADV. PG. 124
Research Electronics Laboratory, Roslyn, Pa.
Rutherford Electronics Corp., 3707 S. Robertson Blvd., Culver City, Calif.
Sangamo Electric Co., Springfield, Ill.
SCIENTIFIC SPECIALTIES CORP., Snow & Union Sts., Brighton 35, Mass. ADV. PG. 138
Standard Electronics Research Corp., 2 East End Ave., New York 21, N. Y.
Sunshine Scientific Instrument, 180-12 Grant Ave., Philadelphia 15, Pa.
Taller & Cooper Inc., 75 Front St., Brooklyn, N. Y.
Taylor Instrument Companies, 95 Ames St., Rochester, N. Y.
Telectro Industries Corp., 35-16 37th St., Long Island City 1, N. Y.
Trott Electronics Co., 1944 Clinton Ave., N., Rochester 21, N. Y.
Ultrasonic Corp., 640 Memorial Drive, Cambridge 39, Mass.
Walkirt Co., 145 W. Hazel, Inglewood, Calif.
Weltronic Co., 19500 W. Eight Mile Rd., Detroit 19, Mich.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.
Weston Electrical Instrument Corp., 614 Frelinghuysen Ave., Newark 5, N. J.
Wilson & Co., G. C., 1950 Eighth Ave., Huntington, W. Va.
Worner Electronic Devices, Rankin, Ill.

CONTROLS—Vacuum

Associated Valve & Engineering Co., 1150 W. Marquette Rd., Chicago 21, Ill.
Automatic Temperature Control Co., Inc., 5206 Pulaski Ave., Philadelphia 44, Pa.
Bourns Laboratories, 6135 Magnolia Blvd., Riverside, Calif.
Bristol Co., Waterbury 20, Conn.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Conoflow Corp., 2100 Arch St., Philadelphia 3, Pa.
Consolidated Vacuum Corp., 1775 Mt. Read Blvd., Rochester 3, N. Y.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Fredericks Co., George E., Bethayres, Pa.
Fulton Sylphon Division, Robertshaw-Fulton Controls Co., Knoxville 1, Tenn.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2-6
Greiner Co., Emil, 26 N. Moore St., New York 13, N. Y.
Hagan Corp., 323 Fourth Ave., Pittsburgh 22, Pa.
Hastings Instrument Co., Superhighway at Pine Ave., Hampton, Va.
High Vacuum Equipment Corp., 349 Lincoln St., Hingham, Mass.
Industrial Controls, Inc., 525 N. Noble St., Chicago 22, Ill.
Infra Electronic Corp., Roseland, N. J.
Kahle Engineering Co., 1307 Seventh St., North Bergen, N. J.
Leslie Co., 299 Grant Ave., Lyndhurst, N. J.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Measurement Engineering Ltd., Arnprior, Ontario, Canada
Mercoid Corp., 4201 Belmont Ave., Chicago 41, Ill.
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave. S., Minneapolis, Minn.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Back Cover
Naer Corp., 2301 S. Purdue Ave., West Los Angeles, Calif.
National Research Corp., 160 Charlemont St., Newton Highlands, Mass.
Process & Instruments, 15 Stone Ave., Brooklyn 33, N. Y.
Swartwout Co., 18547 Euclid Ave., Cleveland, Ohio
Taller & Cooper Inc., 75 Front St., Brooklyn, N. Y.
Telectro Industries Corp., 35-16 37th St., Long Island City 1, N. Y.
U. S. Gauge Div., American Machine and Metals, Inc., Sellersville, Pa.
Vacuum Electronic Engineering Co., 86 Denton Ave., New Hyde Park, N. Y.
Vacuum Tube Products, 506 S. Cleveland St., Oceanside, Calif.
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 107
Wakefield Industries, Inc., 5108 Grove St., Skokie, Ill.
Wallace & Tiernan, Inc., Belleville 9, N. J.
Weston Electrical Instrument Corp., 614 Frelinghuysen Ave., Newark 5, N. J.

CONTROLS—Ventilating

Dietz Co., Henry G., 12-16 Astoria Blvd., Long Island City 2, N. Y.
Fulton Sylphon Division, Robertshaw-Fulton Controls Co., Knoxville 1, Tenn.
General Controls Co., Glendale 1, Calif.
Hagan Corp., 323 Fourth Ave., Pittsburgh 22, Pa.
Johnson Service Co., 507 E. Michigan St., Milwaukee 2, Wis.
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., S., Minneapolis, Minn.
Pantatron Ltd., Teleflex Works, High Rd., Chadwell Heath, Essex, England
Paragon Electric Co., Two Rivers, Wis.
Powers Regulator Co., The, 3400 Oakton, Skokie, Ill.
Taller & Cooper Inc., 75 Front St., Brooklyn, N. Y.
Telectro Industries Corp., 35-16 37th St., Long Island City 1, N. Y.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.
Worner Electronic Devices, Rankin, Ill.

CONVERTERS

Airpax Products Co., Middle River, Baltimore 20, Md.
American Electric Motors, Inc., 4811 Telegraph Rd., Los Angeles 22, Calif.
ATOMIC INSTRUMENT CO., 84 Massachusetts Ave., Cambridge 39, Mass. ADV. PG. Inside Back Cover
Avion Instrument Corp., Div. of American Car & Foundry Co., 295 State Highway #17, Paramus, N. J.
BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121

Bill Jack Scientific Instrument Co., P. O. Box C-39, Solana Beach, Calif.
Bogue Electric Mfg. Co., 52 Iowa Ave., Paterson 3, N. J.
Boonton Radio Corp., Boonton, N. J.
Bristol Co., Waterbury 20, Conn.
Carter Motor Co., 2644 N. Maplewood Ave., Chicago 47, Ill.
Continental Electric Co., Inc., 334 Ferry St., Newark 5, N. J.
Electric Specialty Co., 211 South St., Stamford, Conn.
Electronic Measurements Co., Inc., Lewis St. & Maple Ave., Eatontown, N. J.
Federal Telephone & Radio Co., A Div. of International Telephone & Telegraph Corp., 100 Kingsland Rd., Clifton, N. J.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Franklin Electronics, Inc., 415 W. Pike St., Philadelphia 40, Pa.
Garod Radio Corp., 79 Washington St., Brooklyn 1, N. Y.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Gerator Corp., Manassas, Va.
Gothard Mfg. Co., 2110 Clear Lake Ave., Springfield, Ill.
Great Lakes Electric Mfg. Co., 17 S. Desplaines St., Chicago 6, Ill.
Industrial Control Co., Straight Path & Arlington Ave., Wyandanch, N. Y.
Inet Div. of Leach Corp., 4441 Santa Fe Ave., Los Angeles 58, Calif.
Kings Electronics Co., 40 Marbledale Rd., Tuckahoe, N. Y.
Leland Electric Co., Div. of American Machine & Foundry Co., 1501 Webster Ave., Dayton 1, Ohio
Librascope, Inc., 808 Western Ave., Glendale, Calif.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Back Cover
Robbins & Myers, Inc., 1345 Lagonda Ave., Springfield, Ohio
Servo Corp. of America, 2020 Jericho Turnpike, New Hyde Park, N. Y.
Sorensen & Co., Inc., 375 Fairfield Ave., Stamford, Conn.
Spencer-Kennedy Labs., Inc., 186 Massachusetts Ave., Cambridge 39, Mass.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Terado Co., 1068 Raymond Ave., St. Paul 14, Minn.
Varo Mfg. Co., Inc., 1801 Walnut St., Garland, Texas
WELCH SCIENTIFIC CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148
Weltronic Co., 19500 W. Eight Mile Rd., Detroit 19, Mich.

COOLANTS

See METALS—Liquid
WATER—Heavy

COUNTERS—Binary or Decade

See SCALERS

COUNTERS—Crystal Conduction

Infra Electronic Corp., Roseland, N. J.
Interelectronics Corp., 2432 Grand Concourse, New York 58, N. Y.
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132

COUNTERS—Electro-Mechanical

Ahrendt Instrument Co., 4910 Calvert Rd., College Park, Md.
ATOMIC INSTRUMENT CO., 84 Massachusetts Ave., Cambridge 39, Mass. ADV. PG. Inside Back Cover
Baldwin Instrument Co., Ltd., Brooklands Works, Dartford, Kent, England
Bowmar Instrument Corp., 2415 Pennsylvania Ave., Fort Wayne, Ind.
Clary Multiplier Corp., 408 Junipero St., San Gabriel, Calif.
Cramer Co., Inc., The, R. W., Box 13, Centerbrook, Conn.
Cyclotron Specialties Co., Moraga 8, Calif.
Eclipse-Pioneer Div., Bendix Aviation Corp., Teterboro, N. J.
Falk & Co., Ltd., M., 5 Victoria St., London S W. 1, England
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Guardian Electric Co., 1625 W. Walnut St., Chicago, Ill.
Haydon Mfg. Co., Inc., 2400 Elm St., Torrington, Conn.
Hewlett-Packard Co., 395 Page Mill Rd., Palo Alto, Calif.
Hycon Mfg. Co., 2961 E. Colorado St., Pasadena 8, Calif.
Imtra Corp., 58 Charles St., Cambridge 41, Mass.
Infra Electronic Corp., Roseland, N. J.
Kellogg Switchboard & Supply Co., 79 W. Monroe, Chicago 3, Ill.
Landis & Gyr, Inc., 45 W. 45th St., New York 36, N. Y.
Photobell Co., 116 Nassau St., New York 7, N. Y.
Production Instrument Co., 710 W. Jackson Blvd., Chicago 6, Ill.
Radio Corporation of America, Engineering Products Div., Camden, N. J.
Ultrasonic Corp., 640 Memorial Drive, Cambridge 39, Mass.
Unimax Div. of The W. L. Maxson Corp., 460 W. 34th St., New York 1, N. Y.

COUNTERS—Flow

Advance Electronics Co., 451 Highland Ave., Passaic, N. J.
ATOMIC INSTRUMENT CO., 84 Massachusetts Ave., Cambridge 39, Mass. ADV. PG. Inside Back Cover
Atomlab, Inc., 489 Fifth Ave., New York 17, N. Y.
Automatic Temperature Control Co., Inc., 5206 Pulaski Ave., Philadelphia 44, Pa.
B-I-F Industries, Inc., P. O. Box 1342, Providence, R. I.
Bogue Electric Mfg. Co., 52 Iowa Ave., Paterson 3, N. J.
Builders-Providence, Inc., Div. of B-I-F Industries, Inc., 530 Harris Ave., Providence 1, R. I.
CURTISS-WRIGHT CO., ELECTRONICS DIV., Carlstadt, N. J. ADV. PG. 31
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
EKCO ELECTRONICS LTD., EKCO WORKS, Southend-on-Sea, Essex, England. ADV. PG. 127
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
Federal Telephone & Radio Co., A Div. of International Telephone & Telegraph Corp., 100 Kingsland Rd., Clifton, N. J.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Infra Electronic Corp., Roseland, N. J.
Labline, Inc., 217 N. Desplaines St., Chicago 6, Ill.
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
NUCLEAR INSTRUMENT & CHEMICAL CORP., 229 W. Erie St., Chicago 10, Ill. ADV. PG. 137
NUCLEAR MEASUREMENTS CORP., 2460 N. Arlington Ave., Indianapolis 18, Ind. ADV. PG. 122
NUCLEONIC CO. OF AMERICA, 196 De Graw St., Brooklyn 31, N. Y. ADV. PG. 112
Packard Instrument Co., P. O. Box 428, La Grange, Ill.
Potter Instrument Co., 115 Cutter Mill Rd., Great Neck, N. Y.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
Streeter-Amet Co., 4101 Ravenswood Ave., Chicago 13, Ill.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
Twentieth Century Electronics, Ltd., Dunbar Works, Dunbar St., West Norwood, London, S. E. 27, England
WOOD COUNTER LABORATORY, N., 5491 Blackstone, Chicago 15, Ill. ADV. PG. 139

COUNTERS—G-M, Alpha Sensitive

Advance Electronics Co., 451 Highland Ave., Passaic, N. J.
Airmec Ltd., High Wycombe, Buckinghamshire, England
Amperex Electronic Corp., 230 Duffy Ave., Hicksville, N. Y.
ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 150
Atomlab, Inc., 489 Fifth Ave., New York 17, N. Y.
BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121
CURTISS-WRIGHT CO., ELECTRONICS DIV., Carlstadt, N. J. ADV. PG. 31
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
EKCO ELECTRONICS, LTD., EKCO WORKS, Southend-on-Sea, Essex, England. ADV. PG. 127
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
KEN RESEARCH, INC., 831 Fifth Ave., River Edge, N. J. ADV. PG. 136
LERMAC, INC., 5303 Adeline St., Oakland, Calif. ADV. PG. 114
Measurement Engineering Ltd., Arnprior, Ontario, Canada
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
Nuclear Development Laboratory, P. O. Box 7034, Kansas City, Mo.
NUCLEAR INSTRUMENT & CHEMICAL CORP., 229 W. Erie St., Chicago 10, Ill. ADV. PG. 137
NUCLEONIC CO. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 112
Precision Radiation Instruments, Inc., 2235 S. La Brea Ave., Los Angeles 16, Calif.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
TECHNICAL ASSOCIATES, 140 W. Providencia Ave., Burbank, Calif. ADV. PG. 109
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
Twentieth Century Electronics, Ltd., Dunbar Works, Dunbar St., West Norwood, London, S. E. 27, England
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 107
WOOD COUNTER LABORATORY, N., 5491 Blackstone, Chicago 15, Ill. ADV. PG. 139

COUNTERS—G-M, Beta Sensitive

Advance Electronics Co., 451 Highland Ave., Passaic, N. J.
Airmec Ltd., High Wycombe, Buckinghamshire, England
Alco Mfg. Co., 4011 Cuming St., Omaha 3, Neb.
Amperex Electronic Corp., 230 Duffy Ave., Hicksville, N. Y.
ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 150
ATOMIC INSTRUMENT CO., 84 Massachusetts Ave., Cambridge 39, Mass. ADV. PG. Inside Back Cover
Atomlab, Inc., 489 Fifth Ave., New York 17, N. Y.
BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121
Burndept Ltd., West St., Erith, Kent, United Kingdom
Chatham Electronics Corp., Livingston, N. J.
Cinema-Television Ltd., Worsley Bridge Rd., London, S. E. 26, England
CURTISS-WRIGHT CO., ELECTRONICS DIV., Carlstadt, N. J. ADV. PG. 31
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
Detectron Corp., 5420 Vineland Ave., North Hollywood, Calif.
EKCO ELECTRONICS LTD., EKCO WORKS, Southend-on-Sea, Essex, England. ADV. PG. 127
Electronic Products Co., 111 E. Third St., Mount Vernon, N. Y.
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
Goldak Co., 1544 W. Glenoaks Blvd., Glendale 1, Calif.
LEIGHTON LABS., H. W., 26 Herman St., Glen Ridge, N. J. ADV. PG. 124
LERMAC, INC., 5303 Adeline St., Oakland, Calif. ADV. PG. 114
Measurement Engineering Ltd., Arnprior, Ontario, Canada
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
North American Philips Co., Inc., 750 S. Fulton Ave., Mt. Vernon, N. Y.
Nuclear Development Laboratory, P. O. Box 7034, Kansas City, Mo.
NUCLEAR INSTRUMENT & CHEMICAL CORP., 229 W. Erie St., Chicago 10, Ill. ADV. PG. 137
Nuclear Research Corp., Southampton, Pa.
NUCLEONIC CO. OF AMERICA, 196 De Graw St., Brooklyn 31, N. Y. ADV. PG. 112
Precision Radiation Instruments, Inc., 2235 S. La Brea Ave., Los Angeles 16, Calif.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
Sherwin Instrument Co., 2875 Broadway, New York 25, N. Y.
Special Instruments Laboratory, Inc., 1003 Highland Ave., Knoxville, Tenn.
TECHNICAL ASSOCIATES, 140 W. Providencia Ave., Burbank, Calif. ADV. PG. 109
TRACERLAB, INC., 130 High Street, Boston 10, Mass. ADV. PG. 23
Twentieth Century Electronics, Ltd., Dunbar Works, Dunbar St., West Norwood, London, S. E. 27, England
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 107
Western Radiation Lab., 1107 W. 24th St., Los Angeles 7, Calif.
WOOD COUNTER LABORATORY, N., 5491 Blackstone, Chicago 15, Ill. ADV. PG. 139

COUNTERS—G-M, Gamma Sensitive

Advance Electronics Co., 451 Highland Ave., Passaic, N. J.
Airmec Ltd., High Wycombe, Buckinghamshire, England
Alco Mfg. Co., 4011 Cuming St., Omaha 3, Neb.
Amperex Electronic Corp., 230 Duffy Ave., Hicksville, N. Y.
ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 150
Atomic Energy of Canada Ltd., Commercial Products Div., P. O. Box 93, Ottawa, Ontario, Canada
ATOMIC INSTRUMENT CO., 84 Massachusetts Ave., Cambridge 39, Mass. ADV. PG. Inside Back Cover
Atomlab, Inc., 489 Fifth Ave., New York 17, N. Y.
Baldwin Instrument Co., Ltd., Brooklands Works, Dartford, Kent, England

BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121
Burndept Ltd., West St., Erith, Kent, United Kingdom
Chatham Electronics Corp., Livingston, N. J.
Cinema-Television Ltd., Worsley Bridge Rd., London S. E. 26, England
CURTISS- WRIGHT CO., ELECTRONICS DIV., Carlstadt, N. J. ADV. PG. 31
Cyclotron Specialties Co., Moraga 8, Calif.
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
Detectron Corp., 5420 Vineland Ave., North Hollywood, Calif.
EKCO ELECTRONICS LTD., EKCO WORKS, Southend-on-Sea, Essex, England. ADV. PG. 127
Electronic Products Co., 111 E. Third St., Mount Vernon, N. Y.
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
Fleming Radio (Developments) Ltd., 18–20 Laystall St., London, E. C. 1, England
Goldak Co., 1544 W. Glenoaks Blvd., Glendale 1, Calif.
LaRoe Instruments, Inc., Box 5906, Bethesda 14, Md.
LEIGHTON LABS., H. W., 26 Herman St., Glen Ridge, N. J. ADV. PG. 124
LERMAC, INC., 5303 Adeline St., Oakland, Calif. ADV. PG. 114
Manufacturers Engineering & Equipment Corp., York & Mill Rds., Hatboro, Pa.
Measurement Engineering Ltd., Arnprior, Ontario, Canada
Menlo Research Laboratory, Menlo Park, Calif.
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
Nuclear Development Laboratory, P. O. Box 7034, Kansas City, Mo.
NUCLEAR INSTRUMENT & CHEMICAL CORP., 229 W. Erie St., Chicago 10, Ill. ADV. PG. 137
Nuclear Research Corp., Southampton, Pa.
NUCLEONIC CO. OF AMERICA, 196 De Graw St., Brooklyn 31, N. Y. ADV. PG. 112
Precision Radiation Instruments, Inc., 2235 S. La Brea Ave., Los Angeles 16, Calif.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
Sherwin Instrument Co., 2875 Broadway, New York 25, N. Y.
Special Instruments Laboratory, Inc., 1003 Highland Ave., Knoxville, Tenn.
TECHNICAL ASSOCIATES, 140 W. Providencia Ave., Burbank, Calif. ADV. PG. 109
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
Twentieth Century Electronics, Ltd., Dunbar Works, Dunbar St., West Norwood, London, S. E. 27, England
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 107
Western Radiation Lab., 1107 W. 24th St., Los Angeles 7, Calif.
WOOD COUNTER LABORATORY, N., 5491 Blackstone, Chicago 15, Ill. ADV. PG. 139

COUNTERS—G-M, High Temperature

Advance Electronics Co., 451 Highland Ave., Passaic, N. J.
ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 150
Electronic Products Co., 111 E. Third St., Mount Vernon, N. Y.
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
LERMAC, INC., 5303 Adeline St., Oakland, Calif. ADV. PG. 114
Measurement Engineering Ltd., Arnprior, Ontario, Canada
Nuclear Development Laboratory, P. O. Box 7034, Kansas City, Mo.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
Twentieth Century Electronics Ltd., Dunbar Works, Dunbar Norwood, London S. E. 27, England
WOOD COUNTER LABORATORY, N., 5491 Blackstone, Chicago 15, Ill. ADV. PG. 139

COUNTERS—Magnetic

Advance Electronics Co., 451 Highland Ave., Passaic, N. J.
Bowmar Instrument Corp., 2415 Pennsylvania Ave., Fort Wayne, Ind.
Epsco, Incorporated, 126 Massachusetts Ave., Boston, Mass.
FORD INSTRUMENT CO., DIV. OF SPERRY CORP., 31–10 Thomson Ave., Long Island City, N. Y. ADV. PG. 105
Guardian Electric Co., 1625 W. Walnut St., Chicago, Ill.
Imtra Corp., 58 Charles St., Cambridge 41, Mass.
Infra Electronic Corp., Roseland, N. J.
Kellogg Switchboard & Supply Co., 79 W. Monroe, Chicago 3, Ill.
Landis & Gyr, Inc., 45 W. 45th St., New York 36, N. Y.
Magnetic Research Corp., 200 E. Center St., El Segundo, Calif.
Photocon Research Products, 421 N. Foothill Blvd., Pasadena 7, Calif.
Production Instrument Co., 710 W. Jackson Blvd., Chicago 6, Ill.
Veeder-Root, Inc., 20 Sargeant St., Hartford 2, Conn.

COUNTERS—Mechanical

Ahrendt Instrument Co., 4910 Calvert Rd., College Park, Md.
Bowmar Instrument Corp., 2415 Pennsylvania Ave., Fort Wayne, Ind.
Clary Multiplier Corp., 408 Junipero St., San Gabriel, Calif.
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
Empire State Laboratories, Inc., 2608 Merrick Rd., Bellmore, N.Y.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
GENERAL MILLS, INC., MECHANICAL DIV., 1620 Central Ave., N. E., Minneapolis, Minn. ADV. PG. 101
Infra Electronic Corp., Roseland, N. J.
KOLLSMAN INSTRUMENT CORP., 80–08 45th Ave., Elmhurst, N. Y. ADV. PG. 11
Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.
Photocon Research Products, 421 N. Foothill Blvd., Pasadena 7, Calif.
Production Instrument Co., 710 W. Jackson Blvd., Chicago 6, Ill.
Remington Rand Inc., Engineering Research Associates Div., 1902 W. Minnehaha Ave., St. Paul W4, Minn.
Streeter-Amet Co., 4101 Ravenswood Ave., Chicago 13, Ill.
TECHNICAL MEASUREMENT CORP., 140–142 State St., New Haven, Conn. ADV. PG. 128
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
Veeder-Root, Inc., 20 Sargeant St., Hartford 2, Conn.

COUNTERS—Methane Flow, Alpha Sensitive

Advance Electronics Co., 451 Highland Ave., Passaic, N. J.
Atomlab, Inc., 489 Fifth Ave., New York 17, N. Y.
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
EKCO ELECTRONICS LTD., EKCO WORKS, Southend-on-Sea, Essex, England. ADV. PG. 127
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
NUCLEAR MEASUREMENTS CORP., 2460 N. Arlington Ave., Indianapolis 18, Ind. ADV. PG. 122
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
WOOD COUNTER LABORATORY, N., 5491 Blackstone, Chicago 15, Ill. ADV. PG. 139

COUNTERS—Neutron Sensitive

ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 150
Burndept Ltd., West St., Erith, Kent, United Kingdom
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Hycon Mfg. Co., 2961 E. Colorado St., Pasadena 8, Calif.
JORDAN ELECTRONIC MFG. CO., INC., Union Bldg., 119 E. Union St., Pasadena 1, Calif. ADV. PG. 129, 136
LERMAC, INC., 5303 Adeline St., Oakland, Calif. ADV. PG. 114
NATIONAL RADIAC, INC., 10 Crawford St., Newark 2, N. J. ADV. PG. 21
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
NUCLEAR INSTRUMENT & CHEMICAL CORP., 229 W. Erie St., Chicago 10, Ill. ADV. PG. 137
NUCLEONIC CO. OF AMERICA, 196 De Graw St., Brooklyn 31, N. Y. ADV. PG. 112
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
Radioactive Products, Inc., 540 W. Congress St., Detroit 26, Mich.
Twentieth Century Electronics, Ltd., Dunbar Works, Dunbar St., West Norwood, London S. E. 27, England
WESTINGHOUSE ELECTRIC CORP., ELECTRONIC TUBE DIV., Box 284, Elmira, N. Y. ADV. PG. 29
WOOD COUNTER LABORATORY, N., 5491 Blackstone, Chicago 15, Ill. ADV. PG. 139

COUNTERS—Probing, Medical

ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 150
ATOMIC INSTRUMENT CO., 84 Massachusetts Ave., Cambridge 39, Mass. ADV. PG. Inside Back Cover
BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121
Burndept Ltd., West St., Erith, Kent, United Kingdom
CURTISS-WRIGHT CO., ELECTRONICS DIV., Carlstadt, N. J. ADV. PG. 31
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
EKCO ELECTRONICS LTD., EKCO WORKS, Southend-on-Sea, Essex, England. ADV. PG. 127
JORDAN ELECTRONIC MFG. CO., INC., Union Bldg., 119 E. Union St., Pasadena 1, Calif. ADV. PG. 129, 136
LEIGHTON LABS., H. W., 26 Herman St., Glen Ridge, N. J. ADV. PG. 124
LERMAC, INC., 5303 Adeline St., Oakland, Calif. ADV. PG. 114
Manufacturers Engineering & Equipment Corp., York & Mill Rds., Hatboro, Pa.
Marconi Instruments Ltd., 23 Beaver St., New York 4, N. Y.
Meditronic Instruments, 4867 Fountain Ave., Hollywood 29, Calif.
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
NUCLEAR INSTRUMENT & CHEMICAL CORP., 229 W. Erie St., Chicago 10, Ill. ADV. PG. 137
NUCLEONIC CO. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 112
Ohmart Corp., 2236 Bogen St., P. O. Box 67, Sta. B, Cincinnati 22, Ohio
Precision Radiation Instruments, Inc., 2235 S. La Brea Ave., Los Angeles 16, Calif.
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
Twentieth Century Electronics Ltd., Dunbar Works, Dunbar St., West Norwood, London S. E. 27, England
WOOD COUNTER LABORATORY, N., 5491 Blackstone, Chicago 15, Ill. ADV. PG. 139

COUNTERS—Proportional

ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 150
ATOMIC INSTRUMENT CO., 84 Massachusetts Ave., Cambridge 39, Mass. ADV. PG. Inside Back Cover
Atomlab, Inc., 489 Fifth Ave., New York 17, N. Y.
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
Douglas Radio Labs. 176 Norfolk Ave., Boston 19, Mass.
EKCO ELECTRONICS LTD., EKCO WORKS, Southend-on-Sea, Essex, England. ADV. PG. 127
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
Epsco, Incorporated, 126 Massachusetts Ave., Boston, Mass.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
JORDAN ELECTRONIC MFG. CO., INC., Union Bldg., 119 E. Union St., Pasadena 1, Calif. ADV. PG. 129, 136
LERMAC, INC., 5303 Adeline St., Oakland, Calif. ADV. PG. 114
Measurement Engineering Ltd., Arnprior, Ontario, Canada
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
North American Philips Co., 750 S. Fulton Ave., Mt. Vernon, N. Y.
NUCLEAR INSTRUMENT & CHEMICAL CORP., 229 W. Erie St., Chicago 10, Ill. ADV. PG. 137
NUCLEAR MEASUREMENTS CORP., 2460 N. Arlington Ave., Indianapolis 18, Ind. ADV. PG. 122
Potter Instrument Co., 115 Cutter Mill Rd., Great Neck, N. Y.
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
Radioactive Products, Inc., 540 W. Congress St., Detroit 26, Mich.
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
Trott Electronics Co., 1944 Clinton Ave., N., Rochester 21, N. Y.
Twentieth Century Electronics, Ltd., Dunbar Works, Dunbar St., West Norwood, London, S. E. 27, England
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 107
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.

WESTINGHOUSE ELECTRIC CORP., ELECTRONIC TUBE DIV., Box 284, Elmira, N. Y. ADV. PG. 29
WOOD COUNTER LABORATORY, N., 5491 Blackstone, Chicago 15, Ill. ADV. PG. 139

COUNTERS—Pulse

Advance Electronics Co., 451 Highland Ave., Passaic, N. J.
ANTON ELECTRONIC LABS., INC., 1226-38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 150
ATOMIC INSTRUMENT CO., 84 Massachusetts Ave., Cambridge 39, Mass. ADV. PG. Inside Back Cover
Audio Products Corp., 2265 Westwood Blvd., Los Angeles 64, Calif.
BENDIX AVIATION CORP., CINCINNATI DIV., 203 W. Third St., Cincinnati 2, Ohio. ADV. PG. 14
BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121
Bowmar Instrument Corp., 2415 Pennsylvania Ave., Fort Wayne, Ind.
Burroughs Corp., Electronic Instruments Div., 1209 Vine St., Philadelphia 7, Pa.
Cinema-Television Ltd., Worsley Bridge Rd., London, S. E. 26, England
Clary Multiplier Corp., 408 Junipero St., San Gabriel, Calif.
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
Detectron Corp., 5420 Vineland Ave., North Hollywood, Calif.
Douglas Radio Labs., 176 Norfolk Ave., Boston 19, Mass.
EKCO ELECTRONICS LTD., EKCO WORKS, Southend-on-Sea, Essex, England. ADV. PG. 127
El-Tronics Inc., 5th & Noble Sts., Philadelphia 23, Pa.
Epsco, Incorporated, 126 Massachusetts Ave., Boston, Mass.
Fischer & Porter Co., 50 Warminster Pd., Hatboro, Pa.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Guardian Electric Co., 1625 W. Walnut St., Chicago, Ill.
Hewlett-Packard Co., 395 Page Mill Rd., Palo Alto, Calif.
Hycon Mfg. Co., 2961 E. Colorado St., Pasadena 8, Calif.
Infra Electronic Corp., Roseland, N. J.
Measurement Engineering Ltd., Arnprior, Ontario, Canada
Minnesota Electronics Corp., 1058 University Ave., St. Paul 4, Minn.
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
North American Philips Co., Inc., 750 S. Fulton Ave., Mt. Vernon, N. Y.
NUCLEAR MEASUREMENTS CORP., 2460 N. Arlington Ave., Indianapolis 18, Ind. ADV. PG. 122
NUCLEONIC CO. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 112
Phebco, Inc., 3640 Woodland Ave., Baltimore 15, Md.
Press Wireless Laboratories, Inc., 25 Prospect Place, West Newton 65, Mass.
Potter Instrument Co., 115 Cutter Mill Rd., Great Neck, N. Y.
Production Instrument Co., 710 W. Jackson Blvd., Chicago 6, Ill.
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
Rutherford Electronics Corp., 3707 S. Robertson Blvd., Culver City, Calif.
Streeter-Amet Co., 4101 Ravenswood Ave., Chicago 13, Ill.
TECHNICAL MEASUREMENT CORP., 140-142 State St., New Haven, Conn. ADV. PG. 128
Telecomputing Corp., 133 E. Santa Anita Ave., Burbank, Calif.
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
Trott Electronics Co., 1944 Clinton Ave., N., Rochester 21, N. Y.
Twentieth Century Electronics Ltd., Dunbar Works, Dunbar St., West Norwood, London S. E. 27, England
Watkirt Co., 145 W. Hazel, Inglewood, Calif.
Wang Laboratories, 37 Hurley St., Cambridge 41, Mass.
Yellow Springs Instrument Co., Inc., P. O. Box 106, Yellow Springs, Ohio

COUNTERS—Rate

See METERS—Counting Rate

COUNTERS—Scintillation

Advance Electronics Co., 451 Highland Ave., Passaic, N. J.
ANTON ELECTRONIC LABS., INC., 1226-38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 150
ATOMIC INSTRUMENT CO., 84 Massachusetts Ave., Cambridge 39, Mass. ADV. PG. Inside Back Cover
Atomlab, Inc., 489 Fifth Ave., New York 17, N. Y.
BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121
Burndept Ltd., West St., Erith, Kent, United Kingdom
CURTISS-WRIGHT CO., ELECTRONICS DIV., Carlstadt, N. J. ADV. PG. 31
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
Detectron Corp., 5420 Vineland Ave., North Hollywood, Calif.
Douglas Radio Labs., 176 Norfolk Ave., Boston 19, Mass.
EKCO ELECTRONICS LTD., EKCO WORKS, Southend-on-Sea, Essex, England. ADV. PG. 127
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Goldak Co., 1544 W. Glenoaks Blvd., Glenoale 1, Calif.
Hewlett-Packard Co., 395 Page Mill Rd., Palo Alto, Calif.
Interelectronics Corp., 2432 Grand Concourse, New York 58, N. Y.
KEN RESEARCH, INC., 831 Fifth Ave., River Edge, N. J. ADV. PG. 136
La Roe Instruments, Inc., Box 5906, Bethesda 14, Md.
LERMAC INC., 5303 Adeline St., Oakland, Calif. ADV. PG. 114
Macdonald Co., Inc., W. S., 33 University Rd., Cambridge 38, Mass.
Measurement Engineering Ltd., Arnprior, Ontario, Canada
Meditronic Instruments, 4867 Fountain Ave., Hollywood 29, Calif.
Menlo Research Laboratory, Menlo Park, Calif.
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
NATIONAL RADIAC, INC., 10 Crawford St., Newark 2, N. J. ADV. PG. 21
North American Philips Co., Inc., 750 S. Fulton Ave., Mt. Vernon, N. Y.
Northern Electronic & Vacuum Industries, St. Sauveur des Monts, P. Q., P. O. Box 105M, Canada
NUCLEAR INSTRUMENT & CHEMICAL CORP., 229 W. Erie St., Chicago 10, Ill. ADV. PG. 137
NUCLEAR MEASUREMENTS CORP., 2460 N. Arlington Ave., Indianapolis 18, Ind. ADV. PG. 122
Nuclear Research Corp., Southampton, Pa.
NUCLEONIC CO. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 112
PSC Applied Research Ltd., 1500 O'Connor Drive, Toronto 16, Ontario, Canada
Professional Instrument Corp., 149 Broadway, New York 6, N. Y.
Packard Instrument Co., P. O. Box 428, La Grange, Ill.
Potter Instrument Co., 115 Cutter Mill Rd., Great Neck, N. Y.
Precision Radiation Instruments, Inc., 2235 S. LaBrea Ave., Los Angeles 16, Calif.
Professional Instrument Corp., 149 Broadway, New York 6, N. Y.
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
Sherwin Instrument Co., 2875 Bradway, New York 25, N. Y.
Standard Electronics Research Corp., 2 East End Ave., New York 21, N. Y.
TECHNICAL ASSOCIATES, 140 W. Providencia Ave., Burbank, Calif. ADV. PG. 109
TECHNICAL MEASUREMENT CORP., 140-142 State St., New Haven, Conn. ADV. PG. 128
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
Trott Electronics Co., 1944 Clinton Ave., N., Rochester 21, N. Y.
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 107
WOOD COUNTER LABORATORY, N., 5491 Blackstone, Chicago 15, Ill. ADV. PG. 139

COUNTERS—X-Ray

Amperex Electronic Corp., 230 Duffy Ave., Hicksville, N. Y.
ANTON ELECTRONIC LABS., INC., 1226-38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 150
Baldwin Instrument Co., Ltd., Brooklands Works, Dartford, Kent, England
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn, 32, N. Y. ADV. PG. 10
EKCO ELECTRONICS LTD., EKCO WORKS, Southend-on-Sea, Essex, England. ADV. PG. 127
Electronic Products Co., 111 E. Third St., Mount Vernon, N. Y.
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
Emerson-Sock-Warner Corp., 150 Dorchester Ave., South Boston 27, Mass.
JORDAN ELECTRONIC MFG. CO., INC., Union Bldg., 119 E. Union St., Pasadena 1, Calif. ADV. PG. 129, 136
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
NATIONAL RADIAC, INC., 10 Crawford St., Newark 2, N. J. ADV. PG. 21
North American Philips Co., Inc., 750 S. Fulton Ave., Mt. Vernon, N. Y.
Nuclear Development Laboratory, P. O. Box 7034, Kansas City, Mo.
NUCLEONIC CO. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 112
Production Instrument Co., 710 W. Jackson Blvd., Chicago 6, Ill.
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
Standard Electronics Research Corp., 2 East End Ave., New York 21, N. Y.
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
Trott Electronics Co., 1994 Clinton Ave., N., Rochester 21, N. Y.
Twentieth Century Electronics, Ltd., Dunbar Works, Dunbar St., West Norwood, London, S. E. 27, England
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 107
Western Radiation Lab., 1107 W. 24th St., Los Angeles 7, Calif.
WOOD COUNTER LABORATORY, N., 5491 Blackstone, Chicago 15, Ill. ADV. PG. 139
X-Ray Dept. of General Electric Co., 4855 Electric Ave., Milwaukee, Wis.

COUNTING RATE METERS

See METERS—Counting Rate

CRUSHERS

See PULVERIZERS

CRYSTALS—Scintillation

See also PHOSPHORS, Scintillation

ATOMIC INSTRUMENT CO., 84 Massachusetts Ave., Cambridge 39, Mass. ADV. PG. Inside Back Cover
Bio-Rad Laboratories, 800 Delaware St., Berkeley, Calif.
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
EKCO ELECTRONICS LTD., EKCO WORKS, Southend-on-Sea, Essex, England. ADV. PG. 127
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
Harshaw Chemical Co., 1945 E. 97th St., Cleveland 6, Ohio
Jasonals Chemical Corp., 825 E. 42nd St., Brooklyn 10, N. Y.
Keystone Electronics Co., 114 Manhattan St., Stamford, Conn.
La Roe Instruments, Inc., Box 5906, Bethesda 14, Md.
Levinthal Electronic Products, 2821 Fair Oaks Ave., Redwood City, Calif.
Macdonald Co., Inc., W. S., 33 University Rd., Cambridge 38, Mass.
Measurement Engineering Ltd., Arnprior, Ontario, Canada
Meditronic Instruments, 4867 Fountain Ave., Hollywood 29, Calif.
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
NATIONAL RADIAC, INC., 10 Crawford St., Newark 2, N. J. ADV. PG. 21
Northern Electronic & Vacuum Industries, St. Sauveur des Monts, P. Q., P. O. Box 105M, Canada
Professional Instrument Corp., 149 Broadway, New York 6, N. Y.
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
Standard Electronics Research Corp., 2 East End Ave., New York 21, N. Y.
Sylvania Electric Products, Inc., 1740 Broadway, New York 19, N. Y.
TECHNICAL MEASUREMENT CORP., 140-142 State St., New Haven, Conn. ADV. PG. 128
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
Wakefield Industries, Inc., 5108 Grove St., Skokie, Ill.

DECADE BOXES—Capacitance

CAMBRIDGE INSTRUMENT CO., INC., Grand Central Terminal, New York 17, N. Y. ADV. PG. 136
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Cornell-Dubilier Electric Corp., South Plainfield, N. J.
Electrodyne Co., Endicott St., Norwood, Mass.
Electronic Instrument Co., Inc., 84 Withers St., Brooklyn 11, N. Y.
Federal Telephone & Radio Co., A Div. of International Telephone & Telegraph Corp., 100 Kingsland Rd., Clifton, N. J.
Freed Transformer Co., Inc., 1736 Weirfield St., Brooklyn 27, N. Y.
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.

Gudeman Co., 340 W. Huron St., Chicago 10, Ill.
Heath Co., Benton Harbor, Mich.
Industrial Instruments, Inc., 89 Commerce Rd., Cedar Grove, N. J.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 131
Measurement Engineering Ltd., Arnprior, Ontario, Canada
Metropolitan Electronics & Instruments Co., 106 Fifth Ave., New York 11, N. Y.
Muirhead & Co., Ltd., Beckenham, Kent, England
Precise Development Corp., 2 Neil Court, Oceanside, N. Y.
Raytheon Mfg. Co., Equipment Operations, Waltham 54, Mass.
Rochester Electronics Co., Inc., Box 227, Penfield, N. Y.
Shallcross Mfg. Co., 10 Jackson Ave., Collingdale, Pa.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
WELCH SCIENTIFIC CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148
Western Sound & Electric Labs., Inc., 805 S. Fifth St., Milwaukee 4, Wis.

DECADE BOXES—Inductance

Barker & Williamson, 235 Fairfield Ave., Upper Darby, Pa.
CAMBRIDGE INSTRUMENT CO., INC., Grand Central Terminal, New York 17, N. Y. ADV. PG. 136
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Communication Accessories Co., Red Bridge Rd., Hickman Hills, Mo.
Freed Transformer Co., Inc., 1736 Weirfield St., Brooklyn 27, N. Y.
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
Hycor Co., Inc., 11423 Vanowen St., North Hollywood, Calif.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 131
Lenkurt Electric Co., Inc., 1113 County Road, San Carlos, Calif.
Metropolitan Electronics & Instruments Co., 106 Fifth Ave., New York 11, N. Y.
Muirhead & Co., Ltd., Beckenham, Kent, England
Raytheon Mfg. Co., Equipment Operations, Waltham 54, Mass.
Shallcross Mfg. Co., 10 Jackson Ave., Collingdale, Pa.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Torocoil Co., 1374 Mobile Court, St. Louis, Mo.
United Transformer Co., 150 Varick St., New York 13, N. Y.
Western Sound & Electric Labs., Inc., 805 S. Fifth St., Milwaukee 4, Wis.

DECADE BOXES—Resistance

Baldwin Instrument Co., Ltd., Brooklands Works, Dartford, Kent, England
Bond Electronics Corp., 60 Springfield Ave., Springfield, N. J.
CAMBRIDGE INSTRUMENT CO., INC., Grand Central Terminal, New York 17, N. Y. ADV. PG. 136
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Cinema Engineering Co., Div. of Aerovox Corp., 1100 Chestnut St., Burbank, Calif.
Clarostat Mfg. Co., Inc., Dover, New Hampshire
Cornell-Dubilier Electric Corp., South Plainfield, N. J.
Daven Co., The, 191 Central Ave., Newark 4, N. J.
Eastern Precision Resistor Corp., 130–11 90th Ave., Richmond Hill, N. Y.
Electrodyne Co., Endicott St., Norwood, Mass.
Electro Measurements, Inc., 4312 S. E. Stark St., Portland 15, Ore.
Electronic Instrument Co., Inc., 84 Withers St., Brooklyn 11, N. Y.
Federal Telephone & Radio Co., A. Div. of International Telephone & Telegraph Corp., 100 Kingsland Rd., Clifton, N. J.
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
Goodyear Aircraft Corp., 1210 Massillion Rd., Akron 15, Ohio
Heath Co., Benton Harbor, Mich.
Henry & Miller Industries, 45 Rockefeller Plaza, New York 20, N. Y.
Hycor Co., Inc., 11423 Vanowen St., North Hollywood, Calif.
Industrial Instruments, Inc., 89 Commerce Rd., Cedar Grove, N. J.
Lee Electronic Labs., Inc., 233 Dudley St., Roxbury 19, Mass.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 131
Leland Instruments Ltd., 22–23 Millbank, Westminster, S. W. 1, London, England
Measurement Engineering Ltd., Arnprior, Ontario, Canada
Metropolitan Electronics & Instruments Co., 106 Fifth Ave., New York 11, N. Y.
Muirhead & Co., Ltd., Beckenham, Kent, England
Ohmite Mfg. Co., 3601 Howard St., Skokie, Ill.
Phaostron Co., 151 Pasadena Ave., South Pasadena, Calif.
Precise Development Corp., 2 Neil Court, Oceanside, N. Y.
Raytheon Mfg. Co., Equipment Operations, Waltham 54, Mass.
Rubicon Co., Ridge Ave. at 35th St., Philadelphia 32, Pa.
SCIENTIFIC SPECIALTIES CORP., Snow & Union Sts., Brighton 35, Mass. ADV. PG. 138
Shallcross Mfg. Co., 10 Jackson Ave., Collingdale, Pa.
Sticht Co., Inc., Herman H., 27 Park Place, New York 7, N. Y.
Tech Laboratories, Inc., Bergen & Edsall Blvds., Palisades Park, N. J.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
WELCH SCIENTIFIC CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148
Western Sound & Electric Labs., Inc., 805 S. Fifth St., Milwaukee 4, Wis.
Winslow Co., Inc., 9 Liberty St., Newark, N. J.

DECONTAMINANTS

See also DETERGENTS

ATOMIC RESEARCH LABORATORY, 2633 Santa Monica Blvd., Santa Monica, Calif. ADV. PG. 142
Atomlab, Inc., 489 Fifth Ave., New York 17, N. Y.
Geigh Industrial Chemicals Div. of Geigh Chemical Corp., 89 Barclay St., New York 8, N. Y.
Passaic Analytical Labs., Inc., 228 Aycrigg Ave., Passaic, N. J.
Versenes Inc., 875 Waverly St., Framingham, Mass.

DEHUMIDIFIERS

Baker Co., Inc., The, Maplewood, Maine
Carrier Corp., 300 S. Geddes St., Syracuse, N. Y.
Kahn & Co., Inc., 541 Windsor St., Hartford, Conn.
Kellogg Switchboard & Supply Co., 79 W. Monroe, Chicago 3, Ill.
LENNARD CO., INC., P. M., 671 Bergen St., Brooklyn 38, N. Y. ADV. PG. 26
Linick Chemical Co., 59 E. Madison St., Chicago 3, Ill.
Pittsburgh Lectrodryer Corp., P. O. Box 1766, Pittsburgh, Pa.
Remington Air Conditioning Div., Willey St., Auburn, N. Y.
Trane Company, The, LaCrosse, Wis.
York Corp., York Pa.

DEIONIZATION APPARATUS

See WATER CONDITIONERS

DELAY LINES

Advance Electronics Co., 451 Highland Ave., Passaic, N. J.
Aerovox Corp., 740 Belleville Ave., New Bedford, Mass.
Aircraft-Marine Products, Inc., Chemicals & Dielectrics Div., 155 Park St., Elizabethtown, Pa.
Andersen Laboratories, Inc., 39 Talcott Rd., West Hartford 10, Conn.
Arenberg Ultrasonic Laboratory, 94 Green St. Jamaica Plain 30, Mass.
Audio Instrument Co., Inc., 133 W. 14th St., New York 11, N. Y.
Barker & Williamson, 235 Fairfield Ave., Upper Darby, Pa.
Brew & Co., Inc., Richard D., Airport Rd., Concord, N. H.
C.G.S. Laboratories, Inc., 391 Ludlow St., Stamford, Conn.
Centralab Div. of Globe-Union, Inc., 900 E. Keefe Ave., Milwaukee 1, Wis.
CLEGG LABORATORIES, INC., 142 S. Livingston Ave., Livingston, N. J. ADV. PG. 110
Columbia Technical Corp., 5 E. 57th St., New York 22, N. Y.
Communication Accessories Co., Red Bridge Rd., Hickman Hills, Mo.
Computer Control Co., Inc., 92 Broad St., Babson Park 57, Mass.
Control Electronics Co., Inc., 1925 New York Ave., Huntington Station, N. Y.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 106
Dallons Laboratories, Inc., 5066 Santa Monica Blvd., Los Angeles, Calif.
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
Electronic Associates, Inc., Long Branch, N. J.
Electronic Computer Div., Underwood Corp., 35–10 36th Ave., Long Island City 6, N. Y.
Empire Electronics Co., Inc., 166 River St., Paterson, N. J.
Empire State Laboratories, Inc., 2608 Merrick Rd., Bellmore, N. Y.
Epsco, Incorporated, 126 Massachusetts Ave., Boston, Mass.
Federal Telephone & Radio Co., A Div. of International Telephone & Telegraph Corp., 100 Kingsland Rd., Clifton, N. J.
Gudeman Co., 340 W. Huron St., Chicago 10, Ill.
Guiton Mfg. Corp., 212 Durham Ave., Metuchen, N. J.
Helipot Corp., Div. of Beckman Instruments, Inc., 916 Meridan Ave., South Pasadena, Calif.
Hycon Mfg. Co., 2961 E. Colorado St., Pasadena 8, Calif.
Jacobs Instrument Co., 4718 Bethesda Ave., Bethesda, Md.
Kings Electronics Co., 40 Marbledale Rd., Tuckahoe, N. Y.
Levinthal Electronic Products, 2821 Fair Oaks Ave., Redwood City, Calif.
McShan Development Corp., 71 Murray St., New York 3, N. Y.
Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.
Ossian Mfg. Co., Box 151A, Ossian, Ind.
PCA Electronics, Inc., 2180 Colorado Ave., Santa Monica, Calif.
Pacific Division, Bendix Aviation Corp., 11600 Sherman Way, North Hollywood, Calif.
Raytheon Mfg. Co., Equipment Operations, Waltham 54, Mass.
Redman Electronics Corp., P. O. Box 72, Thompsonville, Conn.
Remington Rand Inc., Engineering Research Associates Div., 1902 W. Minnehaha Ave., St. Paul W4, Minn.
Sanders Associates, Inc., Nashua, N. H.
Shallcross Mfg. Co., 10 Jackson Ave., Collingdale, Pa.
Sickles Div., F. W., General Instrument Corp., 165 Front St., Chicopee, Mass.
Technitrol Engineering Co., 2751 N. 4th St., Philadelphia 33, Pa.
Techron Co., 254–256 Friend St., Boston 14, Mass.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Thermal American Fused Quartz Co., Inc., 18–20 Salem St., Dover, N. J.
U. S. Electronics Corp., 276 Warren St., Lyndhurst, N. J.
West Coast Electronics Co., 5873 W. Jefferson, Los Angeles 16, Calif.

DEMAGNETIZERS

Amplifier Corp. of America, 396 Broadway, New York 13, N. Y.
Carbaloy Dept. of General Electric Co., 11139 E. Eight Mile Blvd., Detroit 32, Mich.
Falk & Co., Ltd., M., 5 Victoria St., London S. W. 1, England
Fisher Engineering, Inc., 2060 U. S. 24 East, P. O. Box 327, Huntington, Ind.
Jobbins Electronic Enterprises, Menlo Park, Calif.
Kahn & Co., Inc., 541 Windsor St., Hartford, Conn.
Linick Chemical Co., 59 E. Madison St., Chicago 3, Ill.
Magnaflux Corp., 7300 W. Lawrence Ave., Chicago 31, Ill.
Minnesota Electronics Corp., 1058 University Ave., St. Paul 4, Minn.
Power Transformer Co., Inc., 532 Mulberry St., Newark 5, N. J.
Radio Frequency Labs., Inc., Boonton 2, N. J.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.

DEMINERALIZERS

See also WATER CONDITIONERS

Barnstead Still & Sterilizer Co., 222 Lanesville Terrace, Boston 31, Mass.
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV PG. 10
Bio-Rad Laboratories, 800 Delaware St., Berkeley, Calif.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Illinois Water Treatment Co., 858 Cedar St., Rockford, Ill.
Infilco, Inc., P. O. Box 5033, Tucson, Ariz.
LaMotte Chemical Products Co., Towson 4, Md.
Penfield Mfg. Co., Inc., Meriden, Conn.

DENSITOMETERS—Optical

Applied Research Labs., P. O. Box 1710, Glendale 5, Calif.
Baldwin Instrument Co. Ltd., Brooklands Works, Dartford, Kent, England
Bausch & Lomb Optical Co., 630 St. Paul St., Rochester 2, N. Y.
Farrand Optical Co., Inc., Bronx Blvd. at E. 238th St., New York 70, N. Y.
Gaertner Scientific Corp., 1237 Wrightwood Ave., Chicago, Ill.
Hogan Laboratories, Inc., 155 Perry St., New York 14, N. Y.
Instrument Development Labs., Inc., 163 Highland Ave., Needham Heights, Mass.
Jarrell-Ash Co., 26 Farwell St., Newtonville, Mass.
Macbeth Corp., P. O. Box 950, Newburgh, N. Y.
Matthew Laboratories, 345 Nepperhan Ave., Yonkers 2, N. Y.
Perkin-Elmer Corp., Norwalk, Conn.
SCIENTIFIC SPECIALTIES CORP., Snow & Union Sts., Brighton 35, Mass. ADV. PG. 138
Sobotka Co., Eric, 104 W. 42nd St., New York, N. Y.

Specialized Instruments Corp., Belmont, Calif.
WELCH SCIENTIFIC CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148

DESICCATORS

Ace Glass, Inc., Vineland, N. J.
Baker Co., Inc., The, Maplewood, Maine
Barium & Chemicals, Inc., Willoughby, Ohio
Bethlehem Apparatus Co., Inc., Front & Depot Sts., Hellertown, Pa.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Cooper Co., D. C., 1467 S. Michigan Ave., Chicago, Ill.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 106
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Kahn & Co., Inc., 541 Windsor St., Hartford, Conn.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Sargent & Co., E. H., 4647 W. Foster Ave., Chicago 30, Ill.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Wheaton Co., T. C., Millville, N. J.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

DESICCATORS—Micro

Ace Glass, Inc., Vineland, N. J.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
LERMAC INC., 5303 Adeline St., Oakland, Calif. ADV. PG. 114
Scientific Glass Apparatus Co., Inc., 100 Lakewood Terrace, Bloomfield, N. J.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

DESICCATORS—Vacuum

Ace Glass, Inc., Vineland, N. J.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 106
International Pump & Machine Works, 11–13 Governor St., Newark 2, N. J.
LERMAC INC., 5303 Adeline St., Oakland, Calif. ADV. PG. 114
Vacuum Electronic Engineering Co., 86 Denton Ave., New Hyde Park, N. Y.
Wheaton Co., T. C., Millville, N. J.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

DESKS

Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Laboratory Furniture Co., Inc., P. O. Box 590, Mineola, N. Y.
Lyon Metal Products Inc., 10 Montgomery St., Aurora, Ill.
Watson Mfg. Co., Inc., Jamestown, N. Y.
WELCH SCIENTIFIC CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148

DETECTORS—Hazardous or Poisonous Gas

Davis Emergency Equipment Co., Inc., 252 Halleck St., Newark, N. J.
Instrument Development Labs., Inc., 163 Highland Ave., Needham Heights, Mass.
Johnson-Williams, Ltd., 2625 Park Blvd., Palo Alto, Calif.
Kruger Instruments, Harold, Box 164, San Gabriel, Calif.
Larson Instrument Co., 24 Orchard St., Tarrytown, N. Y.
LERMAC INC., 5303 Adeline St., Oakland, Calif. ADV. PG. 114
Mine Safety Appliances Co., Braddock, Thomas & Meade Sts., Pittsburgh 8, Pa.
Taller & Cooper Inc., 75 Front St., Brooklyn, N. Y.

DETECTORS—Leak

CONSOLIDATED ENGINEERING CORP., 300 N. Sierra Madre Villa, Pasadena 15, Calif. ADV. PG. Inside Front Cover
Davis Emergency Equipment Co., Inc., 252 Halleck St., Newark, N. J.
Daylite Vacuum Products Co., 5207 N. Milwaukee Ave., Chicago 30, Ill.
Gates & Co., Inc., George W., Hempstead Turnpike & Lucille Ave., Franklin Square, N. Y.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Galdak Co., 1544 W. Glenoaks Blvd., Glendale 1, Calif.
Kahle Engineering Co., 1307 Seventh St., North Bergen, N. J.
Larson Instrument Co., 24 Orchard St., Tarrytown, N. Y.
Measurement Engineering Ltd., Arnprior, Ontario, Canada
Mine Safety Appliances Co., Braddock, Thomas & Meade Sts., Pittsburgh 8, Pa.
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
Vacuum Electronic Engineering Co., 86 Denton Ave., New Hyde Park, N. Y.
Vacuum Tube Products, 506 S. Cleveland St., Oceanside, Calif.

DETECTORS—Radiation

See **CHAMBERS—Ionization**
COUNTERS
DOSIMETERS
FOILS—Radiation Measuring
G-M TUBES
PHOSPHORS—Scintillation

DETECTORS—Radiation, Self Powered

Air Associates, Inc., Teterboro, N. J.
Alco Mfg. Co., 4011 Cuming St., Omaha 3, Neb.
ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 150
ATOMIC INSTRUMENT CO., 84 Massachusetts Ave., Cambridge 39, Mass. ADV. PG. Inside Back Cover
ATOMIC RESEARCH LABORATORY, 2633 Santa Monica Blvd., Santa Monica, Calif. ADV. PG. 142
Baldwin Instrument Co., Ltd., Brooklands Works, Dartford, Kent, England
Beckman Instruments, Inc., 820 Mission St., South Pasadena 183, Calif.
BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121
Burndept Ltd., West St., Erith, Kent, United Kingdom
Chatham Electronics Corp., Livingston, N. J.
Cinema-Television Ltd., Worsley Bridge Rd., London, S. E. 26, England
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 106
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
Detectron Corp., 5420 Vineland Ave., North Hollywood, Calif.
EKCO ELECTRONICS LTD., EKCO WORKS, Southend-on-Sea, Essex, England. ADV. PG. 127
Electronic Products Co., 111 E. Third St., Mount Vernon, N. Y.
Falk & Co., Ltd., M., 5 Victoria St., London S. W. 1. England
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Interelectronics Corp., 2432 Grand Concourse, New York 58, N. Y.
JORDAN ELECTRONIC MFG. CO., INC., Union Bldg., 119 E. Union St., Pasadena 1, Calif. ADV. PG. 129, 136
KEN RESEARCH, INC., 831 Fifth Ave., River Edge, N. J. ADV. PG. 136
LANDAUER, JR., CO., R. S., P. O. Box 102, Park Forest, Ill. ADV. PG. 134
Landsverk Electrometer Co., 550–552 W. Garfield Ave., Glendale 4, Calif.
LaRoe Instruments, Inc., Box 5906, Bethesda 14, Md.
Marconi Instruments, Ltd., 23 Beaver St., New York 4, N. Y.
Menlo Research Laboratory, Menlo Park, Calif.
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
NATIONAL RADIAC, INC., 10 Crawford St., Newark 2, N. J. ADV. PG. 21
North American Philips Co., Inc., 750 S. Fulton Ave., Mt. Vernon, N. Y.
NUCLEAR INSTRUMENT & CHEMICAL CORP., 229 W. Erie St., Chicago 10, Ill. ADV. PG. 137
Nuclear Research Corp., Southampton, Pa.
NUCLEONIC CO., OF AMERICA, 196 De Graw St., Brooklyn 31, N. Y. ADV. PG. 112
Ohmart Corp., 2236 Bogen St., P. O. Box 67, Sta. B, Cincinnati 22, Ohio
Precision Radiation Instruments, Inc., 2235 S. La Brea Ave., Los Angeles 16, Calif.
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
Radioactive Products, Inc., 540 W. Congress St., Detroit 26, Mich.
Servo Corp. of America, 2020 Jericho Turnpike, New Hyde Park, N. Y.
Sherwin Instrument Co., 2875 Broadway, New York 25, N. Y.
Specialty Engineering Div. of Specialty Assembling & Packing Co., 79 Clifton Place, Brooklyn 38, N. Y.
TECHNICAL ASSOCIATES, 140 W. Providencia Ave., Burbank, Calif. ADV. PG. 109
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 107
Western Radiation Lab., 1107 W. 24th St., Los Angeles 7, Calif.

DETECTORS—Vacuum

See **INDICATORS—Vacuum**

DETERGENTS

American Optical Co., 28 Mechanic St., Southbridge, Mass.
Antara Chemicals, Div. of General Aniline & Film Corp., 435 Hudson St., New York 14, N. Y.
Atomlab, Inc., 489 Fifth Ave., New York 17, N. Y.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Carbide & Carbon Chemicals Co., Div. Union Carbide & Carbon Corp., 30 E. 42nd St., New York 17, N. Y.
Cooper Co., D. C., 1467 S. Michigan Ave., Chicago, Ill.
du Pont de Nemours & Co., Inc., E. I., Wilmington 98, Del.
Geigh Industrial Chemicals Div. of Geigh Chemical Corp., 89 Barclay St., New York 8, N. Y.
General Biochemicals, Inc., Laboratory Park, Chagrin Falls, Ohio
Hagan Corp., 323 Fourth Ave., Pittsburgh 22, Pa.
Jasonals Chemical Corp., 825 E. 42nd St., Brooklyn 10, N. Y.
Mathieson Chemical Corp., Olin Industrial Chemicals Div., Baltimore 3, Md.
Monsanto Chemical Co., 1700 S. Second St., St. Louis 1, Mo.
Philadelphia Quartz Co., 1146 Public Ledger Bldg., Philadelphia 6, Pa.

DIODES—Germanium

Amperex Electronic Corp., Duffy Ave., Hicksville, N. Y.
Berkshire Laboratories, 588 Beaver Pond Rd., Lincoln, Mass.
CBS-Hytron, A Div. of Columbia Broadcasting System, Inc., 100 Endicott St., Danvers, Mass.
Federal Telephone & Radio Co., A Div. of International Telephone & Telegraph Corp., 100 Kingsland Rd., Clifton, N. J.
International Rectifier Corp., 1521 E. Grand Ave., El Segundo, Calif.
INTERNATIONAL RESISTANCE CO., 401 N. Broad St., Philadelphia 8, Pa. ADV. PG. 7
RADIO CORPORATION OF AMERICA, TUBE DIV., Harrison, N. J. ADV. PG. 19
Radio Receptor Co., Inc., 251 W. 19th St., New York 11, N. Y.
Raytheon Mfg. Co., Equipment Operations, Waltham 54, Mass.
RAYTHEON MFG. CO., RECEIVING TUBE DIV., 55 Chapel St., Newton 58, Mass. ADV. PG. 20
Sylvania Electric Products, Inc., 1740 Broadway, New York 19, N. Y.
Transistor Products, Inc., 241–257 Crescent St., Waltham 54, Mass.
Tung-Sol Electric, Inc., 95 Eighth Ave., Newark 4, N. J.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.
WESTINGHOUSE ELECTRIC CORP., ELECTRONC TUBE DIV., Box 284, Elmira, N. Y. ADV. PG. 29

DIODES—Silicon

Bomac Laboratories, Inc., Salem Rd., Beverly, Mass.
CBS-Hytron, A Div. of Columbia Broadcasting System, Inc., 100 Endicott St., Danvers, Mass.
Hughes Aircraft Co., Culver City, Calif.
Radio Receptor Co., Inc., 251 W. 19th St., New York 11, N. Y.
RAYTHEON MFG. CO., RECEIVING TUBE DIV., 55 Chapel St., Newton 58, Mass. ADV. PG. 20
Sylvania Electric Products, Inc., 1740 Broadway, New York 19, N. Y.

DISTILLATION EQUIPMENT

Ace Glass, Inc., Vineland, N. J.
American Copper & Brass Works, Inc., Cincinnati 2, Ohio
Babcock & Wilcox Co., 161 E. 42nd St., New York 17, N. Y.
Brighton Copper Works, Inc., 820 State Ave., Cincinnati 4, Ohio
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 106
Daylite Vacuum Products Co., 5207 N. Milwaukee Ave., Chicago 30, Ill.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Glass Engineering Laboratories, Belmont, Calif.
Jasonals Chemical Corp., 825 E. 42nd St., Brooklyn 10, N. Y.
Optical Film Engineering Co., 2731 N. 6th St., Philadelphia 33, Pa.
Pfaudler Co., 1002 West Ave., Rochester, N. Y.

Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
Sargent & Co., E. H., 4647 W. Foster Ave., Chicago 30, Ill.
Scientific Glass Apparatus Co., Inc., 100 Lakewood Terrace, Bloomfield, N. J.

DOSIMETERS

See CHAMBERS—Ionization COUNTERS

DOSIMETERS—Chemical

ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 150
ATOMIC RESEARCH LABORATORY, 2633 Santa Monica Blvd., Santa Monica, Calif. ADV. PG. 142
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 106
TECHNICAL ASSOCIATES, 140 W. Providencia Ave., Burbank, Calif. ADV. PG. 109

DOSIMETERS—Civil Defense

ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 150
ATOMIC RESEARCH LABORATORY, 2633 Santa Monica Blvd., Santa Monica, Calif. ADV. PG. 142
Beckman, Inc., Arnold O., 1020 Mission St., South Pasadena, Calif.
BENDIX AVIATION CORP., CINCINNATI DIV., 203 W. Third St., Cincinnati 2, Ohio. ADV. PG. 14
CAMBRIDGE INSTRUMENT CO., INC., Grand Central Terminal, New York 17, N. Y. ADV. PG. 136
Chatham Electronics Corp., Livingston, N. J.
Cinema-Television Ltd., Worsley Bridge Rd., London S. E. 26, England
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 106
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
EKCO ELECTRONICS LTD., EKCO WORKS, Southend-on-Sea, Essex, England. ADV. PG. 127
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Isotope Specialties Co., 3816 San Fernando Rd., Glendale, Calif.
JORDAN ELECTRONIC MFG. CO., INC., Union Bldg., 119 E. Union St., Pasadena 1, Calif. ADV. PG. 129, 136
LANDAUER, JR., CO., R. S., P. O. Box 102, Park Forest, Ill. ADV. PG. 134
Landsverk Electrometer Co., 550–552 W. Garfield Ave., Glendale 4, Calif.
Librascope, Inc., 808 Western Ave., Glendale, Calif.
Measurement Engineering Ltd., Arnprior, Ontario, Canada
Menlo Research Laboratory, Menlo Park, Calif.
PENBERTHY INSTRUMENT CO., HI-D DIVISION, 666 Adams St., Seattle 8, Wash. ADV. PG. 146
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
St. John X-Ray Laboratory, Califon, N. J.
TECHNICAL ASSOCIATES, 140 W. Providencia Ave., Burbank, Calif. ADV. PG. 109
Twentieth Century Electronics, Ltd., Dunbar Works, Dunbar St., West Norwood, London, S. E. 27, England
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 107

DOSIMETERS—Crystal

CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 106
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132

DOSIMETERS—Film Badge

ATOMIC RESEARCH LABORATORY, 2633 Santa Monica Blvd., Santa Monica, Calif. ADV. PG. 142
Computing Devices of Canada, Ltd., P. O. Box 508, Ottawa 4, Ontario, Canada
Isotope Specialties Co., 3816 San Fernando Rd., Glendale, Calif.
LANDAUER, JR., CO., R. S., P. O. Box 102, Park Forest, Ill. ADV. PG. 134
LERMAC INC. 5303 Adeline St., Oakland, Calif. ADV. PG. 114
NUCLEAR INSTRUMENT & CHEMICAL CORP., 229 W. Erie St., Chicago 10, Ill. ADV. PG. 137
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
St. John X-Ray Laboratory, Califon, N. J.
Samples Machine Co., A. M., 506 N. Central Ave., Knoxville, Tenn.
TECHNICAL ASSOCIATES, 140 W. Providencia Ave., Burbank, Calif. ADV. PG. 109
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
WELCH SCIENTIFIC CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148

DOSIMETERS—G-M

ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 150
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
TECHNICAL ASSOCIATES, 140 W. Providencia Ave., Burbank, Calif. ADV. PG. 109
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 107

DOSIMETERS—Ion Chamber

ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 150
Baldwin Instrument Co., Ltd., Brooklands Works, Dartford, Kent, England
BENDIX AVIATION CORP., CINCINNATI DIV., 203 W. Third St., Cincinnati 2, Ohio. ADV. PG. 14
Burndept Ltd., West St., Erith, Kent, United Kingdom
CAMBRIDGE INSTRUMENT CO., INC., Grand Central Terminal, New York 17, N. Y. ADV. PG. 136
Chatham Electronics Corp., Livingston, N. J.
Cinema-Television Ltd., Worsley Bridge Rd., London, S. E. 26, England
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
EKCO ELECTRONICS LTD., EKCO WORKS, Southend-on-Sea, Essex, England. ADV. PG. 127
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
JORDAN ELECTRONIC MFG. CO., INC., Union Bldg., 119 E. Union St., Pasadena 1, Calif. ADV. PG. 129, 136
Landsverk Electrometer Co., 550–552 W. Garfield Ave., Glendale 4, Calif.
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
NUCLEAR INSTRUMENT & CHEMICAL CORP., 229 W. Erie St., Chicago 10, Ill. ADV. PG. 137
Picker X-Ray Corp., 25 S. Broadway, White Plains, N. Y.
Professional Instrument Corp., 149 Broadway, New York 6, N. Y.
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
Radioactive Products, Inc., 540 W. Congress St., Detroit 26, Mich.
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 107

DOSIMETERS—Personnel

ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 150
Baldwin Instrument Co., Ltd., Brooklands Works, Dartford, Kent, England
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 10
Beckman, Inc., Arnold O., 1020 Mission St., South Pasadena, Calif.
BENDIX AVIATION CORP., CINCINNATI DIV., 203 W. Third St., Cincinnati 2, Ohio. ADV. PG. 14
CAMBRIDGE INSTRUMENT CO., INC., Grand Central Terminal, New York 17, N. Y. ADV. PG. 136
Chatham Electronics Corp., Livingston, N. J.
Cinema-Television Ltd., Worsley Bridge Rd., London, S. E. 26, England
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 106
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
Eastman Kodak Co., Rochester 3, N. Y.
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
Falk & Co., Ltd., M., 5 Victoria St., London, S. W. 1, England
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Isotope Specialties Co., 3816 San Fernando Rd., Glendale, Calif.
KELEKET INSTRUMENT DIVISION, 266–8 W. Fourth St., Covington, Ky. ADV. PG. 140
LANDAUER, JR., CO., R. S., P. O. Box 102, Park Forest, Ill. ADV. PG. 134
Landsverk Electrometer Co., 550–552 W. Garfield Ave., Glendale 4, Calif.
Marconi Instruments Ltd., 23 Beaver St., New York 4, N. Y.
Menlo Research Laboratory, Menlo Park, Calif.
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
NUCLEAR INSTRUMENT & CHEMICAL CORP., 229 W. Erie St., Chicago 10, Ill. ADV. PG. 137
Professional Instrument Corp., 149 Broadway, New York 6, N. Y.
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
Samples Machine Co., A. M., 506 N. Central Ave., Knoxville, Tenn.
St. John X-Ray Laboratory, Califon, N. J.
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 107

DRYERS—Vacuum

See APPARATUS—Drying, Vacuum

ELECTRO-ANALYZERS

Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Eberbach Corp., Ann Arbor, Mich.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Hellige, Inc., 877 Stewart Ave., Long Island City 1, N. Y.
Hogan Laboratories, Inc., 155 Perry St., New York 14, N. Y.
Hycon Mfg. Co., 2961 E. Colorado St., Pasadena 8, Calif.
Kahn & Co., Inc., 541 Windsor St., Hartford, Conn.
Larson Instrument Co., 24 Orchard St., Tarrytown, N. Y.
Lee Electronic Labs., Inc., 233 Dudley St., Roxbury 19, Mass.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 131
Phaostron Co., 151 Pasadena Ave., South Pasadena, Calif.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Sargent & Co., E. H., 4647 W. Foster Ave., Chicago 30, Ill.
Scientific Glass Apparatus Co., Inc., 100 Lakewood Terrace, Bloomfield, N. J.
Sensitive Research Instrument Corp., 9 Elm Ave., Mt. Vernon, N. Y.
Sunshine Scientific Instrument, 180–12 Grant Ave., Philadelphia 15, Pa.

ELECTROLYTIC APPARATUS—Micro

Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Sargent & Co., E. H., 4647 W. Foster St., Chicago 30, Ill.

ELECTROMETERS

Baldwin Instrument Co., Ltd., Brooklands Works, Dartford, Kent, England
Biddle Co., James G., 1316 Arch St., Philadelphia 7, Pa.
CAMBRIDGE INSTRUMENT CO., INC., Grand Central Terminal, New York 17, N. Y. ADV. PG. 136
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
Keithley Instruments, 3868 Carnegie Ave., Cleveland, Ohio
Landsverk Electrometer Co., 550–552 W. Garfield Ave., Glendale 4, Calif.
LEIGHTON LABS., H. W., 26 Herman St., Glen Ridge, N. J. ADV. PG. 124
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Back Cover
Ohmart Corp., 2236 Bogen St., P. O. Box 67, Sta. B, Cincinnati 22, Ohio
Phaostron Co., 151 Pasadena Ave., South Pasadena, Calif.
Rawson Electrical Instrument Co., 114 Potter St., Cambridge 42, Mass.
SCIENTIFIC SPECIALTIES CORP., Snow & Union Sts., Brighton 35, Mass. ADV. PG. 138
Special Instruments Laboratory, Inc., 1003 Highland Ave., Knoxville, Tenn.
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 107

ELECTROMETERS—Vibrating Reed

Applied Physics Corp., 362 Colorado Blvd., Pasadena 1, Calif.
Beckman Instruments, Inc., 820 Mission St., South Pasadena 183, Calif.
Bristol Co., Waterbury 20, Conn.
CURTISS-WRIGHT CO., ELECTRONICS DIV., Carlstadt, N. J. ADV. PG. 31
EKCO ELECTRONICS LTD., EKCO WORKS, Southend-on-Sea, Essex, England. ADV. PG. 127
J–B–T Instruments, Inc., 441 Chapel St., New Haven 8, Conn.
Marconi Instruments Ltd., 23 Beaver St., New York 4, N. Y.

ENGINEERING & DESIGN SERVICES —Nuclear, Radioactivity

Advance Electronics Co., 451 Highland Ave., Passaic, N. J.
Alderson Research Laboratories, Inc., 10 E. 38th St., New York 16, N. Y.
AMERAY CORP., Route #46, Kenvil, N. J. ADV. PG. 123
Atlas Coil, Inc., Cottage St., Derby, Conn.
Atomic Power & Chemicals Corp., 201 Main St., White Plains, N. Y.
ATOMIC RESEARCH LABORATORY, 2633 Santa Monica Blvd., Santa Monica, Calif. ADV. PG. 142
Austin Co., 16112 Euclid Ave., Cleveland 12, Ohio
Babcock & Wilcox Co., 161 E. 42nd St., New York, N. Y.
BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121
Custom Scientific Instruments, Inc., P. O. Box 170, Arlington, N. J.
Dalmo Victor Co., 1414 El Camino Real, San Carlos, Calif.
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
EKCO ELECTRONICS, LTD., EKCO WORKS, Southend-on-Sea, Essex, England. ADV. PG. 127
Electric Steel Foundry Co., 2141 N. W. 25th Ave., Portland 10, Ore.
Elm Laboratories, 18 South Broadway, Dobbs Ferry, N. Y.
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
Engineering Corp. of America, 201 Grove St., Westfield, N. J.
FORD INSTRUMENT CO., DIV. OF SPERRY CORP., 31-10 Thomson Ave., Long Island City, N. Y. ADV. PG. 105
Foster Wheeler Corp., 165 Broadway, New York 6, N. Y.
Franklin Electronics, Inc., 415 W. Pike St., Philadelphia 40, Pa.
GENERAL ELECTRIC CO., ATOMIC POWER EQUIPMENT COMPONENT, 2900 Campbell Ave., Schenectady 6, N. Y. ADV. PG. 2-6
Goldak Co., 1544 W. Glenoaks Blvd., Glendale 1, Calif.
Hagan Corp., 323 Fourth Ave., Pittsburgh 22, Pa.
Horizons, Inc., 90 Nassau St., Princeton, N. J.
Hycon Mfg. Co., 2961 E. Colorado St., Pasadena 8, Calif.
Jacobs Instrument Co., 4718 Bethesda Ave., Bethesda, Md.
Kahle Engineering Co., 1307 Seventh St., North Bergen, N. J.
Kidde Nuclear Laboratories, Inc., Walter, 975 Stewart Ave., Garden City, N. Y.
Knapp Mills, Inc., 23-15 Borden Ave., Long Island City 1, N. Y.
KOLLMORGEN OPTICAL CORP., 347 King St., Northampton, Mass. ADV. PG. 120
Laboratory for Electronics, Inc., 75 Pitts St., Boston 14, Mass.
LANDAUER, JR., CO., R. S., P. O. Box 102, Park Forest, Ill. ADV. PG. 134
LEIGHTON LABS., H. W., 26 Herman St., Glen Ridge, N. J. ADV. PG. 124
Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.
North American Aviation, Inc., Nuclear Engineering & Manufacturing, P. O. Box 309, Downey, Calif.
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
NUCLEAR DEVELOPMENT ASSOCIATES, INC., 80 Grand St., White Plains, N. Y. ADV. PG. 102
Nuclear Research Associates, 2875 Broadway, New York 25, N. Y.
Ohmart Corp., 2236 Bogen St., P. O. Box 67, Sta. B, Cincinnati 22, Ohio
Packard Instrument Co., P. O. Box 428, La Grange, Ill.
Pentron Corp., 221 E. Cullerton St., Chicago 16, Ill.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
Radioactive Products, Inc., 540 W. Congress St., Detroit 26, Mich.
Radio Sonic Corp., 32 W. 22nd St., New York 10, N. Y.
RAY-PROOF CORP., 513 W. 54th St., New York, N. Y. ADV. PG. 22
Rosenberg Associates, Paul, 100 Stevens St., Mt. Vernon, N. Y.
St. John X-Ray Laboratory, Califon, N. J.
SCIENTIFIC SPECIALTIES CORP., Snow & Union Sts., Brighton 35, Mass. ADV. PG. 138
Sunshine Scientific Instrument, 180-12 Grant Ave., Philadelphia 15, Pa.
TECHNICAL MEASUREMENT CORP., 140-142 State St., New Haven, Conn. ADV. PG. 128
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
Trott Electronics Co., 1944 Clinton Ave., N., Rochester 21, N. Y.
Ultrasonic Corp., 640 Memorial Drive, Cambridge 39, Mass.
Videon Electronic Corp., 902 E. Michigan St., Indianapolis 2, Ind.
Vitro Corp. of America, 233 Broadway, New York 7, N. Y.

ENGRAVERS

See MACHINES—Engraving

FANS—Cooling

Air Controls Inc., 2312 Superior Ave., Cleveland 14, Ohio
American Electric Motors, Inc., 4811 Telegraph Rd., Los Angeles 22, Calif.
American Machine & Foundry Co., Broadway at Kennedy Rd., Buffalo 12, N. Y.
American Machine & Metals, Inc., East Moline, Ill.
Century Fan & Ventilator Co., 25 Cedar St., Stamford, Conn.
Clarage Fan Co., 710 Porter St., Kalamazoo, Mich.
Dayton Electric Mfg. Co., 126 S. Oakley Blvd., Chicago 12, Ill.
Eastern Air Devices, Inc., 385 Central Ave., Dover, N. H.
Electric Blower Co., 352 Atlantic Ave., Boston 10, Mass.
Electrovent Fan & Mfg. Co., 812 W. Lake St., Chicago 7, Ill.
Emerson-Sack-Warner Corp., 150 Dorchester Ave., South Boston 27, Mass.
Fasco Industries, Inc., Rochester 2, N. Y.
Ilg Electric Ventilating Co., 2850 N. Crawford Ave., Chicago 41, Ill.
Infra Eectronic Corp., Roseland, N. J.
International Engineering, Inc., 1200 Bolander Ave., Dayton, Ohio
Joy Mfg. Co., Oliver Bldg., Pittsburgh 22, Pa.
Lesa, Via Bergamo 21, Milan, Italy
Mission-Western Engineers, Inc., 132 W. Colorado, Pasadena 1, Calif.
Oster Mfg. Co., John, Avionic Div., 1 Main St., Racine, Wis.
Robbins & Myers, Inc., 1345 Lagonda Ave., Springfield, Ohio
Rotron Mfg. Co., 7 Schoonmaker Lane, Woodstock, N. Y.
Sanders Associates, Inc., Nashua, N. H.
Trane Company, The, La Crosse, Wis.
United States Air Conditioning Corp., Como Ave. SE at 33rd, Minneapolis 14, Minn.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.

FANS—Exhaust

Air Controls, Inc., 2312 Superior Ave., Cleveland 14, Ohio
American Electric Motors, Inc., 4811 Telegraph Rd., Los Angeles 22, Calif.
American Machine & Foundry Co., Broadway at Kennedy Rd., Buffalo 12, N. Y.
American Machine & Metals, Inc., East Moline, Ill.
American Machine Products Co., Marshalltown, Iowa
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 10
Century Fan & Ventilator Co., 25 Cedar St., Stamford, Conn.
Clarage Fan Co., 719 Porter St., Kalamazoo, Mich.
Day Co., The, 820 Third Ave., NE, Minneapolis 13, Minn.
Dayton Electric Mfg. Co., 126 S. Oakley Blvd., Chicago 12, Ill.
DeVilbiss Co., 300 Phillips Ave., Toledo, Ohio
Eastern Air Devices, Inc., 385 Central Ave., Dover, N. H.
Electric Blower Co., 352 Atlantic Ave., Boston 10, Mass.
Electrovent Fan & Mfg. Co., 812 W. Lake St., Chicago 7, Ill.
Emerson-Sack-Warner Corp., 150 Dorchester Ave., South Boston 27, Mass.
Fasco Industries, Inc., Rochester 2, N. Y.
Hirschman-Pohle Co., Inc., 115 Lent Ave., LeRoy, N. Y.
Ilg Electric Ventilating Co., 2850 N. Crawford Ave., Chicago 41, Ill.
Infra Electronic Corp., Roseland, N. J.
International Engineering, Inc., 1200 Bolander Ave., Dayton, Ohio
Jardan & Co., Inc., E. South & New Jersey, Indianapolis, Ind.
Joy Mfg. Co., Oliver Bldg., Pittsburgh 22, Pa.
Laboratory Furniture Co., Inc., P. O. Box 590, Mineola, N. Y.
LENNARD CO., INC., P. M., 671 Bergen St., Brooklyn 38, N. Y. ADV. PG. 26
Mission-Western Engineers, Inc., 132 W. Colorado, Pasadena 1, Calif.
Oster Mfg. Co., John, Avionic Div., 1 Main St., Racine, Wis.
Redmond Co., Inc., Owosso, Mich.
Robbins & Myers, Inc., 1345 Lagonda Ave., Springfield, Ohio
Rotron Mfg. Co., 7 Schoonmaker Lane, Woodstock, N. Y.
Trane Company, The, La Crosse, Wis.
United States Air Conditioning Corp., Como Ave., SE, at 33rd, Minneapolis 14, Minn.
Western Engineering & Mfg., Co., 4108 Ocean Park Ave., Venice, Calif.

FANS—Supply

Air Controls, Inc., 2312 Superior Ave., Cleveland 14, Ohio
American Electric Motors, Inc., 4811 Telegraph Rd., Los Angeles 22, Calif.
American Machine & Metals, Inc., East Moline, Ill.
American Machine Products Co., Marshalltown, Iowa
Century Fan & Ventilator Co., 25 Cedar St., Stamford, Conn.
Clarage Fan Co., 710 Porter St., Kalamazoo, Mich.
Eastern Air Devices, Inc., 385 Central Ave., Dover, N. H.
Emerson-Sack-Warner Corp., 150 Dorchester Ave., South Boston, Mass.
Fasco Industries, Inc., Rochester 2, N. Y.
Infra Electronic Corp., Roseland, N. J.
Joy Mfg. Co., Oliver Bldg., Pittsburgh 22, Pa.
Mission-Western Engineers, Inc., 132 W. Colorado, Pasadena 1, Calif.
Oster Mfg. Co., John, Avionic Div., 1 Main St., Racine, Wis.
Robbins & Myers, Inc., 1345 Lagonda Ave., Springfield, Ohio
Rotron Mfg. Co., 7 Schoonmaker Lane, Woodstock, N. Y.
Trane Company, The, La Crosse, Wis.

FILM BADGES

See DOSIMETERS—Film Badge

FILTER DISKS

Ace Glass, Inc., Vineland, N. J.
Cambridge Filter Corp., 738 Erie Blvd., E., Syracuse, N. Y.
Consolidated Siphon Supply Co., 24 Wooster St., New York, N. Y.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 106
Emerson-Sack-Warner Corp., 150 Dorchester Ave., South Boston, Mass.
Ertel Engineering Corp., 8 N. Front St., Kingston, N. Y.
Fish-Schurman Corp., 70 Portman Rd., New Rochelle, N. Y.
KOLLMORGEN OPTICAL CORP., 347 King St., Northampton, Mass. ADV. PG. 120
Metal Textile Corp., 647 E. First Ave., Roselle, N. J.
Newark Wire Cloth Co., 351 Verona Ave., Newark 4, N. J.
Sargent & Co., E. H., 4647 W. Foster Ave., Chicago 30, Ill.
Sethco Mfg. Co., 70-78 Willoughby St., Brooklyn 1, N. Y.

FILTER PRESSES—Laboratory

American Machine & Metals, Inc., East Moline, Ill.
Bowser Technical Refrigeration Div. of Bowser, Inc., Terryville, Conn.
Carver Inc., Fred S., 1 Chatham Rd., Summit, N. J.
Consolidated Siphon Supply Co., 24 Wooster St., New York, N. Y.
Ertel Engineering Corp., 8 N. Front St., Kingston, N. Y.
Independent Filter Press Co., Inc., 230 48th St., Brooklyn, N. Y.
Jasonals Chemical Corp., 825 E. 42nd St., Brooklyn 10, N. Y.
Sethco Mfg. Co., 70-78 Willoughby St., Brooklyn 1, N. Y.
Shriver & Co., Inc., 808 Hamilton St., Harrison, N. J.

FILTERS—Air

Air Conversion Research Corp., 4107 N. Damen Ave., Chicago 18, Ill.
Baker Co., Inc., The, Maplewood, Maine
Barnstead Still & Sterilizer Co., 222 Lanesville Terrace, Boston 31, Mass.
Cambridge Filter Corp., 738 Erie Blvd., E., Syracuse, N. Y.
Conoflow Corp., 2100 Arch St., Philadelphia 3, Pa.
Day Co., The, 820 Third Ave., NE, Minneapolis 13, Minn.
DeVilbiss Co., 300 Phillips Ave., Toledo, Ohio
Emerson-Sack-Warner Corp., 150 Dorchester Ave., South Boston 27, Mass.
Engelhard, Inc., Charles, 850 Passaic St., East Newark, N. J.
Gas & Oil Industry Laboratories, Inc., 2 Paine Ave., Irvington 11, N. J.
Goodyear Tire & Rubber Co., Akron, Ohio
Hannifin Corp., 501 S. Wolf Rd., Des Plaines, Ill.
Johnson Corp., 809 Wood St., Three Rivers, Mich.
LENNARD CO., INC., P. M., 671 Bergen St., Brooklyn 38, N. Y. ADV. PG. 26
LERMAC INC., 5303 Adeline St., Oakland, Calif. ADV. PG. 114
Metal Textile Corp., 647 E. First Ave., Roselle, N. J.
Mine Safety Appliances Co., Braddock, Thomas & Meade Sts., Pittsburgh 8, Pa.
Owens-Corning Fiberglas Corp., National Bank Bldg., Toledo, Ohio
Sethco Mfg. Co., 70-78 Willoughby St., Brooklyn 1, N. Y.

TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
Trion, Inc., 1000 Island Ave., McKees Rocks, Pa.

FILTERS—Asbestos

American Machine & Metals, Inc., East Moline, Ill.
Cambridge Filter Corp., 738 Erie Blvd., E., Syracuse, N. Y.
Ertel Engineering Corp., 8 N. Front St., Kingston, N. Y.

FILTERS—Cotton

American Machine & Metals, Inc., East Moline, Ill.
Ertel Engineering Corp., 8 N. Front St., Kingston, N. Y.
Independent Filter Press Co., Inc., 230 48th St., Brooklyn, N. Y.
Sethco Mfg. Co., 70–78 Willoughby St., Brooklyn 1, N. Y.
Shriver & Co., Inc., 808 Hamilton St., Harrison, N. J.

FILTERS—Metallic

American Machine & Metals, Inc., East Moline, Ill.
Metal Textile Corp., 647 E. First Ave., Roselle, N. J.
Newark Wire Cloth Co., 351 Verona Ave., Newark 4, N. J.
Picker X-Ray Corp., 25 S. Broadway, White Plains, N. Y.
Shriver & Co., Inc., 808 Hamilton St., Harrison, N. J.

FILTERS—Paper

Ace Glass, Inc., Vineland, N. J.
American Machine & Metals, Inc., East Moline, Ill.
Angel & Co., Inc., H. Reeve, 52 Duane St., New York, N. Y.
Bowser Technical Refrigeration Div. of Bowser, Inc., Terryville, Conn.
Cambridge Filter Corp., 738 Erie Blvd., E., Syracuse, N. Y.
Eaton-Dikeman Co., Filtertown, Mount Holly Springs, Pa.
Ertel Engineering Corp., 8 N. Front St., Kingston, N. Y.
Sargent & Co., E. H., 4647 W. Foster Ave., Chicago 30, Ill.
Shriver & Co., Inc., 808 Hamilton St., Harrison, N. J.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

FILTERS—Radiation

See ABSORBERS—Radiation

FILTERS—Rubber

American Machine & Metals, Inc., East Moline, Ill.
Ertel Engineering Corp., 8 N. Front St., Kingston, N. Y.
Minor Rubber Co., 49 Ackerman St., Bloomfield, N. J.
Shriver & Co., Inc., 808 Hamilton St., Harrison, N. J.
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.

FILTERS—Synthetic Fibre

Cambridge Filter Corp., 738 Erie Blvd., E., Syracuse, N. Y.
Independent Filter Press Co., Inc., 230 48th St., Brooklyn, N. Y.
LERMAC, INC., 5303 Adeline St., Oakland, Calif. ADV. PG. 114
Owens-Corning Fiberglas Corp., National Bank Bldg., Toledo, Ohio
Sethco Mfg. Co., 70–78 Willoughby St., Brooklyn 1, N. Y.
U. S. Ruber Co., 1230 Avenue of the Americas, New York 20, N. Y.
Varniton Co., 416 N. Varney St., Burbank, Calif.

FIRE DETECTION SYSTEM

Connecticut Telephone & Electric Co., 70 Brittania St., Meriden, Conn.
Edison, Inc., Thomas A., Instrument Div., West Orange, N. J.
Electronic Corp. of America, Fireye Div., 720 Beacon St., Boston, Mass.
Kellogg Switchboard & Supply Co., 79 W. Monroe, Chicago 3, Ill.
Larson Instrument Co., 24 Orchard St., Tarrytown, N. Y.

FITTINGS—Flared Tube

Air Associates, Inc., Teterboro, N. J.
Imperial Brass Mfg. Co., 1200 W. Harrison St., Chicago 7, Ill.
Special Screw Products Co., Bedford, Ohio

FLOORING—Acid-proof

Atlas Mineral Products Co., 131 Norman St., Mertztown, Pa.
Division Lead Co., 7742 W. 61st Place, Summit, Ill.
Electro Chemical Supply & Engineering Co., 750 Broad St., Emmaus, Pa.
Johns-Manville, 22 E. 40th St., New York 16, N. Y.
Knapp Mills, Inc., 23–15 Borden Ave., Long Island City, N. Y.
Knight, Maurice A., 171 Kelly Ave., Akron, Ohio
Kraftile Co., Niles, Calif.
Nukem Products Corp., 111 Colgate Ave., Buffalo 20, N. Y.
Rubber & Plastics Compound Co., Inc., 30 Rockefeller Plaza, New York 20, N. Y.
Sauereisen Cements Co., Sauereisen Bldg., Pittsburgh 15, Pa.
U. S. Stoneware Co., Akron 9, Ohio

FLOORING—Asphalt

Armstrong Cork Co., 1010 Concord St., Lancaster, Pa.
Beck & Sons, Inc., 256 Mott St., New York 12, N. Y.
Electro Chemical Supply & Engineering Co., 750 Broad St., Emmaus, Pa.
Johns-Manville, 22 E. 40th St., New York 16, N. Y.

FLOORING—Linoleum

Armstrong Cork Co., 1010 Concord St., Lancaster, Pa.
Beck & Sons, Inc., 256 Mott St., New York 12, N. Y.

FLOORING—Rubber

Armstrong Cork Co., 1010 Concord St., Lancaster, Pa.
Beck & Sons, Inc., 256 Mott St., New York 12, N. Y.
Goodyear Tire & Rubber Co., Akron, Ohio

FLUOROMETERS

Beckman Instruments, Inc., 820 Mission St., South Pasadena 183, Calif.
Coleman Instruments, Inc., Maywood, Ill.
Farrand Optical Co., Inc., Bronx Blvd. at E. 238th St., New York 70, N. Y.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Jarrell-Ash Co., 26 Farwell St., Newtonville, Mass.
Scientific Glass Apparatus Co., Inc., 100 Lakewood Terrace, Bloomfield, N. J.

FLUXMETERS—Magnetic

CAMBRIDGE INSTRUMENT CO., INC., Grand Central Terminal, New York 17, N. Y. ADV. PG. 136
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
DYNA LABS., INC., 1075 Stewart Ave., Garden City, N. Y. ADV. PG. 140
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Infra Electronic Corp., Roseland, N. J.
Kahn & Co., Inc., 541 Windsor St., Hartford, Conn.
Marion Electrical Instrument Co., 402 Canal St., Manchester, N. H.
Measurement Engineering Ltd., Arnprior, Ontario, Canada
Rawson Electrical Instrument Co., 114 Potter St., Cambridge 42, Mass.
Sensitive Research Instrument Corp., 9 Elm Ave., Mt. Vernon, N. Y.
Shurite Meters, 35 Hamilton St., New Haven 8, Conn.
T. L. G. Electric Corp., 31 W. 27th St., New York 1, N. Y.
Varian Associates, 611 Hansen Way, Palo Alto, Calif.

FOILS—Radiation Measuring

Alpha Metals, Inc., P. O. Box 34, 56 Water St., Jersey City 4, N. J.
ATOMIC RESEARCH LABORATORY, 2633 Santa Monica Blvd., Santa Monica, Calif. ADV. PG. 142
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.

FOUNTAINS—Eye

Daylite Vacuum Products Co., 5207 N. Milwaukee Ave., Chicago 30, Ill.
Engineering Corp. of America, 201 Grove St., Westfield, N. J.

FUEL ELEMENTS—Nuclear

Babcock & Wilcox Co., 161 E. 42nd St., New York 17, N. Y.
GENERAL ELECTRIC CO., ATOMIC POWER EQUIPMENT COMPONENT, 2900 Campbell Ave., Schenectady 6, N. Y. ADV. PG. 2–6
NATIONAL LEAD CO., 111 Broadway, New York 6, N. Y. ADV. PG. 27
Sylvania Electric Products, Inc., 1740 Broadway, New York 19, N. Y.

FUME HOODS

Aloe Scientific Div., A. S. Aloe Co., 5655 Kingsbury Blvd., St. Louis 12, Mo.
AMERAY CORP., Route #46, Kenvil, N. J. ADV. PG. 123
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 10
BLICKMAN, INC., S., 7900 Gregory Ave., Weehawken, N. J. ADV. PG. 32
Consolidated Siphon Supply Co., 24 Wooster St., New York, N. Y.
Cooper Co., D. C., 1467 S. Michigan Ave., Chicago, Ill.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Hamilton Mfg. Co., Two Rivers, Wis.
Jasonals Chemical Corp., 825 E. 42nd St., Brooklyn 10, N. Y.
Johns-Manville, 22 E. 40th St., New York 16, N. Y.
Kewaunee Mfg. Co., 5083 S. Center St., Adrian, Mich.
Knapp Mills, Inc., 23–15 Borden Ave., Long Island City 1, N. Y.
Labline, Inc., 217 N. Desplaines St., Chicago 6, Ill.
Laboratory Furniture Co., Inc., P. O. Box 590, Mineola, N. Y.
LENNARD CO., INC., P. M., 671 Bergen St., Brooklyn 38, N. Y. ADV. PG. 26
LERMAC INC., 5303 Adeline St., Oakland, Calif. ADV. PG. 114
Metalab Equipment Corp., 270 Duffy Ave., Hicksville, N. Y.
RAY-PROOF CORP., 513 W. 54th St., New York, N. Y. ADV. PG. 22

FURNACES—Combustion, High Temperature

American Gas Furnace Co., 130 Spring St., Elizabeth, N. J.
Babcock & Wilcox Co., 161 E. 42nd St., New York 17, N. Y.
Burrell Corp., 2233 Fifth Ave., Pittsburgh, Pa.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Eclipse Fuel Engineering Co., 1100 Buchanan, Rockford, Ill.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Foster Wheeler Corp., 165 Broadway, New York 6, N. Y.
Hevi Duty Electric Co., 4212 W. Highland Blvd., Milwaukee 1, Wis.
Kahle Engineering Co., 1307 Seventh St., North Bergen, N. J.
Laboratory Equipment Corp., St. Joseph, Mich.
Lindberg Engineering Co., 2450 W. Hubbard St., Chicago 12, Ill.
Sargent & Co., E. H., 4647 W. Foster Ave., Chicago 30, Ill.

FURNACES—Electric

Burrell Corp., 2223 Fifth Ave., Pittsburgh, Pa.
Cooper Co., D. C., 1467 S. Michigan Ave., Chicago, Ill.
Eclipse Fuel Engineering Co., 1100 Buchanan, Rockford, Ill.
Eisler Engineering Co., 760 S. 13th St., Newark 3, N. J.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Hevi Duty Electric Co., 4212 W. Highland Blvd., Milwaukee 1, Wis.
Huppert Co., K. H., 6830 S. Cottage Grove Ave., Chicago 37, Ill.
Kahle Engineering Co., 1307 Seventh St., North Bergen, N. J.
Laboratory Equipment Corp., St. Joseph, Mich.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 131
Lindberg Engineering Co., 2450 W. Hubbard St., Chicago 12, Ill.
Rockwell Co., W. S., 200 Eliot St., Fairfield, Conn.
Sargent & Co., E. H., 4647 W. Foster Ave., Chicago 30, Ill.
Steiner-Ives Co., Springfield Rd., Union, N. J.
Stewart Engineering, Co., P. O. Box 277, Soquel, Calif.
Western Gold & Platinum Works, 589 Bryant St., San Francisco, Calif.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.

FURNACES—Laboratory

American Gas Furnace Co., 130 Spring St., Elizabeth, N. J.
Baker & Co., Inc., 113 Astor St., Newark 5, N. J.
Burrell Corp., 2233 Fifth Ave., Pittsburgh, Pa.

Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Cooper Co., D. C., 1467 S. Michigan Ave., Chicago, Ill.
Eclipse Fuel Engineering Co., 1100 Buchanan, Rockford, Ill.
Eisler Engineering Co., 760 S. 13th St., Newark 3, N. J.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Hevi Duty Electric Co., 4212 W. Highland Blvd., Milwaukee 1, Wis.
High Vacuum Equipment Corp., 349 Lincoln St., Hingham, Mass.
Huppert Co., K. H., 6830 S. Cottage Grove Ave., Chicago 37, Ill.
Kahle Engineering Co., 1307 Seventh St., North Bergen, N. J.
Laboratory Equipment Corp., St. Joseph, Mich.
Lindberg Engineering Co., 2450 W. Hubbard St., Chicago 12, Ill.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
Sargent & Co., E. H., 4647 W. Foster Ave., Chicago 30, Ill.
Steiner-Ives Co., Springfield Rd., Union, N. J.
Stewart Engineering Co., P. O. Box 277, Soquel, Calif.
Therma Electric Mfg. Co., 465 Huff, Dubuque, Iowa
Western Gold & Platinum Works, 589 Bryant St., San Francisco, Calif.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

FURNACES—Low Temperature

Babcock & Wilcox Co., 161 E. 42nd St., New York 17, N. Y.
Cooper Co., D. C., 1467 S. Michigan Ave., Chicago, Ill.
Eclipse Fuel Engineering Co., 1100 Buchanan, Rockford, Ill.
Eisler Engineering Co., 760 S. 13th St., Newark 3, N. J.
Hevi Duty Electric Co., 4212 W. Highland Blvd., Milwaukee 1, Wis.
Hudson Bay Division, Refrigeration Systems, Inc., 646 W. Washington Blvd., Chicago, Ill.
Huppert Co., K. H., 6830 S. Cottage Grove Ave., Chicago 37, Ill.
Kahle Engineering Co., 1307 Seventh St., North Bergen, N. J.
Lindberg Engineering Co., 2450 W. Hubbard St., Chicago 12, Ill.
Lydon Bros., Inc., 85 Zabriskie St., Hackensack, N. J.
Sargent & Co., E. H., 4647 W. Foster Ave., Chicago 30, Ill.
Steiner-Ives Co., Springfield Rd., Union, N. J.
Stewart Engineering Co., P. O. Box 277, Soquel, Calif.
Tenney Engineering, Inc., 1090 Springfield Rd., Union, N. J.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.

FURNACES—Microcombustion

Aloe Scientific Div., A. S. Aloe Co., 5655 Kingsbury Blvd., St. Louis 12, Mo.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Laboratory Equipment Corp., St. Joseph, Mich.
Lindberg Engineering Co., 2450 W. Hubbard St., Chicago 12, Ill.
Sargent & Co., E. H., 4647 W. Foster Ave., Chicago 30, Ill.

FURNACES—Muffle

American Gas Furnace Co., 130 Spring St., Elizabeth, N. J.
Burrell Corp., 2233 Fifth Ave., Pittsburgh, Pa.
Eclipse Fuel Engineering Co., 1100 Buchanan, Rockford, Ill.
Hevi Duty Electric Co., 4212 W. Highland Blvd., Milwaukee 1, Wis.
High Vacuum Equipment Corp., 349 Lincoln St., Hingham, Mass.
Huppert Co., K. H., 6830 S. Cottage Grove Ave., Chicago 37, Ill.
International Pump & Machine Works, 11–13 Governor St., Newark 2, N. J.
Kahle Engineering Co., 1307 Seventh St., North Bergen, N. J.
Lindberg Engineering Co., 2450 W. Hubbard St., Chicago 12, Ill.
National Research Corp., 160 Charlemont St., Newton Highlands, Mass.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Rockwell Co., W. S., 200 Eliot St., Fairfield, Conn.
Sargent & Co., E. H., 4647 W. Foster Ave., Chicago 30, Ill.
Therma Electric Mfg. Co., 465 Huff, Dubuque, Iowa
Western Gold & Platinum Works, 589 Bryant St., San Francisco, Calif.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.

FURNACES—Vacuum

Consolidated Vacuum Corp., 1775 Mt. Read Blvd., Rochester 3, N. Y.
Hevi Duty Electric Co., 4212 W. Highland Blvd., Milwaukee 1, Wis.
High Vacuum Equipment Corp., 349 Lincoln St., Hingham, Mass.
Huppert Co., K. H., 6830 S. Cottage Grove Ave., Chicago 37, Ill.
International Pump & Machine Works, 11–13 Governor St., Newark 2, N. J.
Kahle Engineering Co., 1307 Seventh St., North Bergen, N. J.
National Research Corp., 160 Charlemont St., Newton Highlands, Mass.
Optical Film Engineering Co., 2731 N. 6th St., Philadelphia 33, Pa.
Stewart Engineering Co., P. O. Box 277, Soquel, Calif.
STOKES MACHINE CO., F. J., 5500 Tabor Rd., Philadelphia 20, Pa. ADV. PG. 24
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.

FURNITURE—Laboratory

See Also CABINETS; HOODS; TABLE TOPS, etc.

Alden Systems Co., Alden Research Center, Westboro, Mass.
Aloe Scientific Div., A. S. Aloe Co., 5655 Kingsbury Blvd., St. Louis 12, Mo.
Baker Co., Inc., The, Maplewood, Maine
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 10
Bethlehem Apparatus Co., Inc., Front & Depot Sts., Hellertown, Pa.
BLICKMAN, INC., S., 7900 Gregory Ave., Weehawken, N. J. ADV. PG. 32
Brooklyn Hospital Equipment Co., Inc., 196 Lexington Ave., New York, N. Y.
Brown Morse Co., Muskegon, Mich.
Burrell Corp., 2233 Fifth Ave., Pittsburgh, Pa.
Doehler Metal Furniture Co., Inc., 194 Lexington Ave., New York, N. Y.
Emerson-Sack Warner Corp., 150 Dorchester Ave., South Boston, Mass.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Gold Seal Mfg. Co., 1230 W. Kinzie St., Chicago 22, Ill.
Hamilton Mfg. Co., Two Rivers, Wis.
Hevi Duty Electric Co., 4212 W. Highland Ave., Milwaukee 1, Wis.
Kewaunee Mfg. Co., 5083 S. Center St., Adrian, Mich.
Labline, Inc., 217 N. Desplaines St., Chicago 6, Ill.
Laboratory Equipment Corp., St. Joseph, Mich.
Laboratory Furniture Co., Inc., P. O. Box 590, Mineola, N. Y.
Metalab Equipment Corp., 270 Duffy Ave., Hicksville, N. Y.
Peterson & Co., Inc., Leonard, 1222 Fullerton Ave., Chicago 14, Ill.
Steiner-Ives Co., Springfield Rd., Union, N. J.
TECHNICAL SERVICE CORP., 1404 W. Market St., Louisville 3, Ky. ADV. PG. 147
Wakefield Industries, Inc., 5108 Grove St., Skokie, Ill.
Watson Mfg. Co., Inc., Jamestown, N. Y.
WELCH SCIENTIFIC CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148

GAGES

See CONTROLS
INDICATORS
METERS

GAGES—Ionization

See CHAMBERS—Ionization

GAGES—McLeod
GAGES—Pirani

See INDICATORS—Pressure

GAGES—Thickness or Density, Radioactivity

ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 150
Baldwin Instrument Co., Ltd., Brooklands Works, Dartford, Kent, England
Bausch & Lomb Optical Co., 630 St. Paul St., Rochester 2, N. Y.
BENDIX AVIATION CORP., CINCINNATI DIV., 203 W. Third St., Cincinnati 2, Ohio. ADV. PG. 14
CURTISS-WRIGHT CO., ELECTRONICS DIV., Carlstadt, N. J. ADV. PG. 31
Custom Scientific Instruments, Inc., P. O. Box 170, Arlington, N. J.
EKCO ELECTRONICS LTD., EKCO WORKS, Southend-on-Sea, Essex, England. ADV. PG. 127
Franklin Electronics, Inc., 415 W. Pike St., Philadelphia 40, Pa.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Gulton Mfg. Corp., 212 Durham Ave., Metuchen, N. J.
Hommel Co., O., 209–213 Fourth Ave., Pittsburgh, Pa.
Hycon Mfg. Co., 2961 E. Colorado St., Pasadena 8, Calif.
Imtra Corp., 58 Charles St., Cambridge 41, Mass.
Industrial Nucleonics Corp., 1205 Chesapeake Ave., Columbus 12, Ohio
Infra Electronic Corp., Roseland, N. J.
Isotope Products Ltd., Davis Rd., Oakville, Ontario, Canada
JORDAN ELECTRONIC MFG. CO., INC., Union Bldg., 119 E. Union St., Pasadena 1, Calif. ADV. PG. 129, 136
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
NUCLEAR INSTRUMENT & CHEMICAL CORP., 229 W. Erie St., Chicago 10, Ill. ADV. PG. 137
Nuclear Research Corp., Southampton, Pa.
Ohmart Corp., 2236 Bogen St., P. O. Box 67, Sta. B, Cincinnati 22, Ohio
Pratt & Whitney Div., Niles-Bement-Pond Co., West Hartford 1, Conn.
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
Standard Electronics Research Corp., 2 East End Ave., New York 21, N. Y.
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
X-Ray Dept. of General Electric Co., 4855 Electric Ave., Milwaukee, Wis.

GAGES—Vacuum

See INDICATORS—Vacuum

GALVANOMETERS

Baldwin Instrument Co., Ltd., Brooklands Works, Dartford, Kent, England
Biddle Co., James G., 1316 Arch St., Philadelphia 7, Pa.
CAMBRIDGE INSTRUMENT CO., INC., Grand Central Terminal, New York 17, N. Y. ADV. PG. 136
Century Geophysical Corp., P. O. Box 6216—Pine Station, Tulsa, Okla.
CONSOLIDATED ENGINEERING CORP., 300 N. Sierra Madre Villa, Pasadena 15, Calif. ADV. PG. Inside Front Cover
Doelcam Corp., 1400 Soldiers Field Rd., Boston 35, Mass.
Edin Co., Inc., 207 Main St., Worcester, Mass.
Engelhard, Inc., Charles, 850 Passaic St., East Newark, N. J.
Federal Telephone & Radio Co., A Div. of International Telephone & Telegraph Corp., 100 Kingsland Rd., Clifton, N. J.
G-M Laboratories, Inc., 4336 N. Knox Ave., Chicago 41, Ill.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Hathaway Instrument Co., 1115 S. Clarkson St., Denver 10, Colo.
Infra Electronic Corp., Roseland, N. J.
J-B-T Instruments, Inc., 441 Chapel St., New Haven 8, Conn.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 131
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Measurement Engineering Ltd., Arnprior, Ontario, Canada
Meters, Inc., 5353 N. Keystone Ave., Indianapolis 20, Ind.
Phaostron Co., 151 Pasadena Ave., South Pasadena, Calif.
Phoenix Precision Instrument Co., 3803–05 North 5th St., Philadelphia, Pa.
Photron Instrument Co., 6516 Detroit Ave., Cleveland 2, Ohio
Rawson Electrical Instrument Co., 114 Potter St., Cambridge 42, Mass.
Rubicon Co., Ridge Ave. at 35th St., Philadelphia 32, Pa.
Sanborn Co., 39 Osborn St., Cambridge, Mass.
SCIENTIFIC SPECIALTIES CORP., Snow & Union Sts., Brighton 35, Mass. ADV. PG. 138
Sensitive Research Instrument Corp., 9 Elm Ave., Mt. Vernon, N. Y.
Shallcross Mfg. Co., 10 Jackson Ave., Collingdale, Pa.
Simpson Electric Co., Div. of American Gage & Machine Co., 5208 W. Kinzie St., Chicago 44, Ill.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Technology Instrument Corp., 531 Main St., Acton, Mass.
Thwing-Albert Instrument Co., Penn St. & Pulaski Ave., Philadelphia 44, Pa.
WELCH SCIENTIFIC CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148
Weston Electrical Instrument Corp., 614 Frelinghuysen Ave., Newark 5, N. J.
Winslow Co., Inc., 9 Liberty St., Newark, N. J.

GAMMA-RAY SOURCES

See ISOTOPES—Radioactive

GAS INSTRUMENTS—Counting

ATOMIC INSTRUMENT CO., 84 Massachusetts Ave., Cambridge 39, Mass. ADV. PG. Inside Back Cover
Davis Emergency Equipment Co., Inc., 252 Halleck St., Newark, N. J.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
Telecomputing Corp., 133 E. Santa Anita Ave., Burbank, Calif.
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23

GASES

Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Carbide & Carbon Chemicals Co., A Div. of Union Carbide & Carbon Corp., 30 E. 42nd St., New York 17, N. Y.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
Wakefield Industries, Inc., 5108 Grove St., Skokie, Ill.

GASES—Inert

Linde Air Products Co., Div. of Union Carbide & Carbon Corp., 30 E. 42nd St., New York 17, N. Y.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.

GASES—Liquefied

Carbide & Carbon Chemicals Co., A Div. of Union Carbide & Carbon Corp., 30 E. 42nd St., New York 17, N. Y.
Little, Inc., Arthur D., Acorn Lane, Cambridge 42, Mass.
Mathieson Chemical Corp., Olin Industrial Chemicals Div., Baltimore 3, Md.

GASES—Rare

Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Linde Air Products Co., Div. of Union Carbide & Carbon Corp., 30 E. 42nd St., New York 17, N. Y.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
Wakefield Industries, Inc., 5108 Grove St., Skokie, Ill.

GASKETS

Air Associates, Inc., Teterboro, N. J.
Anchor Metal Co., 244 Boerum St., Brooklyn 6, N. Y.
Armstrong Cork Co., 1010 Concord St., Lancaster, Pa.
Auburn Mfg. Co., 500 Stack St., Middletown, Conn.
Connecticut Hard Rubber Co., New Haven 9, Conn.
Continental-Diamond Fibre Co., Newark, Delaware
Crane Packing Co., 1800 Cuyler Ave., Chicago, Ill.
Division Lead Co., 7742 W. 61st Place, Summit, Ill.
Felt Products Mfg. Co., 1504 W. Carroll Ave., Chicago 7, Ill.
Flexitallic Gasket Co., 8th & Bailey Sts., Camden 2, N. J.
Garlock Packing Co., Palmyra, N. Y.
Johns-Manville, 22 E. 40th St., New York 16, N. Y.
Maxwell Rubber Products Corp., Industrial St., W., Clifton, N. J.
Minor Rubber Co., 49 Ackerman St., Bloomfield, N. J.
Neo Sil Products Div., Rubber Associates, Inc., 850 Metropolitan Ave., Brooklyn 11, N. Y.
Owens-Corning Fiberglas Corp., National Bank Bldg., Toledo, Ohio
Penn Fibre & Specialty Co., 2020 E. Westmoreland St., Philadelphia 34, Pa.
Republic Rubber Div., Lee Rubber & Tire Corp., Youngstown, Ohio
Shamban & Co., W. S., 11617 W. Jefferson Blvd., Culver City, Calif.
U. S. GASKET CO., FLUOROCARBON PRODUCTS, INC., DIV., 600 N. 10th St., Camden 1, N. J. ADV. PG. 149
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.
Western Felt Works, 4029 Ogden Ave., Chicago, Ill.

G-M APPARATUS

See also COUNTERS—G-M; DOSIMETERS—G-M

ANTON ELECTRONIC LABS., INC., 1226-38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 150
Atomic Energy of Canada Ltd., Commercial Products Div., P. O. Box 93, Ottawa, Ontario, Canada
ATOMIC INSTRUMENT CO., 84 Massachusetts Ave., Cambridge 39, Mass. ADV. PG. Inside Back Cover
Beckman Instruments, Inc., 820 Mission St., South Pasadena 183, Calif.
BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121
Cinema-Television Ltd., Worsley Bridge Rd., London, S. E. 26, England
Daylite Vacuum Products Co., 5207 N. Milwaukee Ave., Chicago 30, Ill.
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
Detectron Corp., 5420 Vineland Ave., North Hollywood, Calif.
EKCO ELECTRONICS LTD., EKCO WORKS, Southend-on-Sea, Essex, England. ADV. PG. 127
Electronic Products Co., 111 E. Third St., Mount Vernon, N. Y.
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
Falk & Co., Ltd., M., 5 Victoria St., London, S. W. 1, England
Isotope Accessories Co., Box 5458, Philadelphia 43, Pa.
Menlo Research Laboratory, Menlo Park, Calif.
NUCLEAR INSTRUMENT & CHEMICAL CORP., 229 W. Erie St., Chicago 10, Ill. ADV. PG. 137
Nuclear Research Corp., Southampton, Pa.
NUCLEONIC CO. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 112
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
Sensitive Research Instrument Corp., 9 Elm Ave., Mt. Vernon, N. Y.
TECHNICAL ASSOCIATES, 140 W. Providencia Ave., Burbank, Calif. ADV. PG. 109
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
Twentieth Century Electronics, Ltd., Dunbar Works, Dunbar St., West Norwood, London, S. E. 27, England
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 107
Western Radiation Lab., 1107 W. 24th, Los Angeles 7, Calif.
WOOD COUNTER LABORATORY, N., 5491 Blackstone, Chicago 15, Ill. ADV. PG. 139

G-M TUBE HOLDERS

ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 150
ATOMIC INSTRUMENT CO., 84 Massachusetts Ave., Cambridge 39, Mass. ADV. PG. Inside Back Cover
BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121
CURTISS-WRIGHT CO., ELECTRONICS DIV., Carlstadt, N. J. ADV. PG. 31
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
EKCO ELECTRONICS LTD., EKCO WORKS, Southend-on-Sea, Essex, England. ADV. PG. 127
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
Isotope Accessories Co., Box 5458, Philadelphia 43, Pa.
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
Nuclear Research Corp., Southampton, Pa.
NUCLEONIC CO. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 112
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
TECHNICAL ASSOCIATES, 140 W. Providencia Ave., Burbank, Calif. ADV. PG. 109
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG 23
Twentieth Century Electronics, Ltd., Dunbar Works, Dunbar St., West Norwood, London, S. E. 27, England
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 107

G-M TUBES—Self-Quenching

Amperex Electronic Corp., 230 Duffy Ave., Hicksville, N. Y.
ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 150
ATOMIC INSTRUMENT CO., 84 Massachusetts Ave., Cambridge 39, Mass. ADV. PG. Inside Back Cover
BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121
Cinema-Television Ltd., Worsley Bridge Rd., London, S. E. 26, England
CURTISS-WRIGHT CO., ELECTRONICS DIV., Carlstadt, N. J. ADV. PG. 31
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
EKCO ELECTRONICS LTD., EKCO WORKS, Southend-on-Sea, Essex, England. ADV. PG. 127
Electronic Products Co., 111 E. Third St., Mount Vernon, N. Y.
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
LERMAC INC., 5303 Adeline St., Oakland, Calif. ADV. PG. 114
North American Philips Co., Inc., 750 S. Fulton Ave., Mt. Vernon, N. Y.
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
Nuclear Development Laboratory, P. O. Box 7034, Kansas City, Mo.
NUCLEAR INSTRUMENT & CHEMICAL CORP., 229 W. Erie St., Chicago 10, Ill. ADV. PG. 137
Nuclear Research Corp., Southampton, Pa.
NUCLEONIC CO. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 112
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
RAYTHEON MFG. CO., RECEIVING TUBE DIV., 55 Chapel St., Newton 58, Mass. ADV. PG. 20
TECHNICAL ASSOCIATES, 140 W. Providencia Ave., Burbank, Calif. ADV. PG. 109
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
Twentieth Century Electronics, Ltd., Dunbar Works, Dunbar St., West Norwood, London, S. E. 27, England
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 107
Welch Allyn, Inc., Skaneateles Falls, N. Y.
Western Radiation Lab., 1107 W. 24th St., Los Angeles 7, Calif.
WOOD COUNTER LABORATORY, N., 5491 Blackstone, Chicago 15, Ill. ADV. PG. 139

G-M TUBES—Thick Wall, Glass

ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 150
ATOMIC INSTRUMENT CO., 84 Massachusetts Ave., Cambridge 39, Mass. ADV. PG. Inside Back Cover
BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121
Cinema-Television Ltd., Worsley Bridge Rd., London, S. E. 26, England
CURTISS-WRIGHT CO., ELECTRONICS DIV., Carlstadt, N. J. ADV. PG. 31
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
EKCO ELECTRONICS LTD., EKCO WORKS, Southend-on-Sea, Essex, England. ADV. PG. 127
Electronic Products Co., 111 E. Third St., Mount Vernon, N. Y.
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
LERMAC INC., 5303 Adeline St., Oakland, Calif. ADV. PG. 114
NUCLEAR INSTRUMENT & CHEMICAL CORP., 229 W. Erie St., Chicago 10, Ill. ADV. PG. 137
Nuclear Research Corp., Southampton, Pa.
NUCLEONIC CO. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 112
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
RAYTHEON MFG. CO., RECEIVING TUBE DIV., 55 Chapel St., Newton 58, Mass. ADV. PG. 20
TECHNICAL ASSOCIATES, 140 W. Providencia Ave., Burbank, Calif. ADV. PG. 109
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
Twentieth Century Electronics, Ltd., Dunbar Works, Dunbar St., West Norwood, London, S. E. 27, England
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 107
Western Radiation Lab., 1107 W. 24th St., Los Angeles 7, Calif.
WOOD COUNTER LABORATORY, N., 5491 Blackstone, Chicago 15, Ill. ADV. PG. 139

G-M TUBES—Thick Wall, Metal

Amperex Eectronic Corp., 230 Duffy Ave., Hicksville, N. Y.
ANTON ELECTRONIC LABS., INC., 1226-38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 150
ATOMIC INSTRUMENT CO., 84 Massachusetts Ave., Cambridge 39, Mass. ADV. PG. Inside Back Cover
BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121
CURTISS-WRIGHT CO., ELECTRONICS DIV., Carlstadt, N. J. ADV. PG. 31
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
EKCO ELECTRONICS LTD., EKCO WORKS, Southend-on-Sea, Essex, England. ADV. PG. 127
Electronic Products Co., 111 E. Third St., Mount Vernon, N. Y.

El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
LEIGHTON LABS., H. W., 26 Herman St., Glen Ridge, N. J. ADV. PG. 124
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
Nuclear Development Laboratory, P. O. Box 7034, Kansas City, Mo.
NUCLEAR INSTRUMENT & CHEMICAL CORP., 229 W. Erie St., Chicago 10, Ill. ADV. PG. 137
NUCLEONIC CO. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 112
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
TECHNICAL ASSOCIATES, 140 W. Providencia Ave., Burbank, Calif. ADV. PG. 109
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
Twentieth Century Electronics, Ltd., Dunbar Works, Dunbar St., West Norwood, London, S. E. 27, England
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 107
Welch Allyn, Inc., Skaneateles Falls, N. Y.
WOOD COUNTER LABORATORY, N., 5491 Blackstone, Chicago 15, Ill. ADV. PG. 139

G-M TUBES—Thin Wall

Amperex Electronic Corp., 230 Duffy Ave., Hicksville, N. Y.
ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 150
ATOMIC INSTRUMENT CO., 84 Massachusetts Ave., Cambridge 39, Mass. ADV. PG. Inside Back Cover
BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121
Cinema-Television Ltd., Worsley Bridge Rd., London, S. E. 26, England
CURTISS-WRIGHT CO., ELECTRONICS DIV., Carlstadt, N. J. ADV. PG. 31
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
EKCO ELECTRONICS LTD., EKCO WORKS, Southend-on-Sea, Essex, England. ADV. PG. 127
Electronic Products Co., 111 E. Third St., Mount Vernon, N. Y.
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
LERMAC INC., 5303 Adeline St., Oakland, Calif. ADV. PG. 114
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
Nuclear Development Laboratory, P. O. Box 7034, Kansas City, Mo.
NUCLEAR INSTRUMENT & CHEMICAL CORP., 229 W. Erie St., Chicago 10, Ill. ADV. PG. 137
Nuclear Research Corp., Southampton, Pa.
NUCLEONIC CO. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 112
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
RAYTHEON MFG. CO., RECEIVING TUBE DIV., 55 Chapel St., Newton 58, Mass. ADV. PG. 20
TECHNICAL ASSOCIATES, 140 W. Providencia Ave., Burbank, Calif. ADV. PG. 109
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
Twentieth Century Electronics, Ltd., Dunbar Works, Dunbar St., West Norwood, London, S. E. 27, England
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 107
Western Radiation Lab., 1107 W. 24th St., Los Angeles 7, Calif.
WOOD COUNTER LABORATORY, N., 5491 Blackstone, Chicago 15, Ill. ADV. PG. 139

G-M TUBES—Thin Window

Amperex Electronic Corp., 230 Duffy Ave., Hicksville, N. Y.
ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 150
ATOMIC INSTRUMENT CO., 84 Massachusetts Ave., Cambridge 39, Mass. ADV. PG. Inside Back Cover
BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121
CURTISS-WRIGHT CO., ELECTRONICS DIV., Carlstadt, N. J. ADV. PG. 31
Cyclotron Specialties Co., Moraga 8, Calif.
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
EKCO ELECTRONICS LTD., EKCO WORKS, Southend-on-Sea, Essex, England. ADV. PG. 127
Electronic Products Co., 111 E. Third St., Mount Vernon, N. Y.
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
LERMAC INC., 5303 Adeline St., Oakland, Calif. ADV. PG. 114
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
North American Philips Co., Inc., 750 S. Fulton Ave., Mt. Vernon, N. Y.
Nuclear Development Laboratory, P. O. Box 7034, Kansas City, Mo.
NUCLEAR INSTRUMENT & CHEMICAL CORP., 229 W. Erie St., Chicago 10, Ill. ADV. PG. 137
Nuclear Research Corp., Southampton, Pa.
NUCLEONIC CO. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 112
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
TECHNICAL ASSOCIATES, 140 W. Providencia Ave., Burbank, Calif. ADV. PG. 109
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
Twentieth Century Electronics, Ltd., Dunbar Works, Dunbar St., West Norwood, London, S. E. 27, England
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 107
WOOD COUNTER LABORATORY, N., 5491 Blackstone, Chicago 15, Ill. ADV. PG. 139

GENERATORS—Audio Frequency

Airmec, Ltd., High Wycombe, Buckinghamshire, England
American Electronic Laboratories, Inc., 641 Arch St., Philadelphia 6, Pa.
Avion Instrument Corp., Div. of American Car & Foundry Co., 295 State Highway #17, Paramus, N. J.
Barker & Williamson, 235 Fairfield Ave., Upper Darby, Pa.
Cinema-Television Ltd., Worsley Bridge Rd., London, S. E. 26, England
CLEGG LABORATORIES, INC., 142 S. Livingston Ave., Livingston, N. J. ADV. PG. 110
Clough Brengle Co., 6014 N. Broadway, Chicago, Ill.
Communication Measurement Labs., Inc., 350 Leland Ave., Plainfield, N. J.
D & R Ltd., 402 E. Gutierrez St., Santa Barbara, Calif.
Daven Co., The, 191 Central Ave., Newark 4, N. J.
Electronic Instrument Co., Inc., 84 Withers St., Brooklyn 11, N. Y.
Elm Laboratories, 18 South Broadway, Dobbs Ferry, N. Y.
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
Federal Mfg. & Engineering Corp., 211 Steuben St., Brooklyn 5, N. Y.
Federal Telephone & Radio Co., A Div. of International Telephone & Telegraph Corp., 100 Kingsland Rd., Clifton, N. J.
Fluke Mfg. Co., Inc., John, 1111 W. Nickerson St., Seattle 99, Wash.
Franklin Electronics, Inc., 415 W. Pike St., Philadelphia 40, Pa.
Garod Radio Corp., 79 Washington St., Brooklyn 1, N. Y.
General Precision Laboratory, Inc., Pleasantville, N. Y.
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
Heath Co., Benton Harbor, Mich.
Hewlett-Packard Co., 395 Page Mill Rd., Palo Alto, Calif.
Hycon Mfg. Co., 2961 E. Colorado St., Pasadena 8, Calif.
Infra Electronic Corp., Roseland, N. J.
International Research Associates, 2221 Warwick Ave., Santa Monica, Calif.
Kahn & Co., Inc., 541 Windsor St., Hartford, Conn.
Kellogg Switchboard & Supply Co., 79 W. Monroe, Chicago 3, Ill.
Krohn-Hite Instrument Co., 580 Massachusetts Ave., Cambridge 39, Mass.
Leland Instruments Ltd., 22–23 Millbank, Westminster, S. W. 1, London, England
Magnavox Co., Components Div., Fort Wayne 4, Ind.
Marconi Instruments, Ltd., 23 Beaver St., New York 4, N. Y.
Measurement Engineering Ltd., Arnprior, Ontario, Canada
Measurements Corp., Boonton, N. J.
Mercury Electronic Co., Box 450, Red Bank, N. J.
Muirhead & Co., Ltd., Beckenham, Kent, England
New London Instrument Co., P. O. Box 189, New London, Conn.
Norrman Laboratories, Ernst, Williams Bay, Wis.
Peschel Electronics, Inc., 13 Garden St., New Rochelle, N. Y.
Precise Development Corp., 2 Neil Court, Oceanside, N. Y.
Precision Apparatus Co., Inc., 92–27 Horace Harding Blvd., Elmhurst, N. Y.
Radio City Products Co., Inc., Centre & Glendale Sts., Easton, Pa.
Radio Corporation of America, Engineering Products Div., Camden, N. J.
RADIO CORPORATION OF AMERICA, TUBE DIV., Harrison, N. J. ADV. PG. 19
Radio Sonic Corp., 32 W. 22nd St., New York 10, N. Y.
Resdel Engineering Corp., 2351 Riverside Drive, Los Angeles 39, Calif.
Servo Corp. of America, 2020 Jericho Turnpike, New Hyde Park, N. Y.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Specialty Engineering Div. of Specialty Assembling & Packing Co., 79 Clifton Place, Brooklyn 38, N. Y.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Ultrasonic Corp., 640 Memorial Drive, Cambridge 39, Mass.
Varo Mfg. Co., Inc., 1801 Walnut St., Garland, Texas
Waveforms, Inc., 333 Sixth Ave., New York 14, N. Y.

GENERATORS—Motor

Air Associates, Inc., Teterboro, N. J.
Allis Co., Louis, 427 E. Stewart St., Milwaukee 7, Wis.
American Electric Motors, Inc., 4811 Telegraph Rd., Los Angeles 22, Calif.
Bill Jack Scientific Instrument Co., P. O. Box C-39, Solana Beach, Calif.
Bogue Electric Mfg. Co., 52 Iowa Ave., Paterson 3, N. J.
Century Electric Co., 1806 Pine St., St. Louis 3, Mo.
Dalmotor Co., 1375 Clay St., Santa Clara, Calif.
Eclipse-Pioneer Div., Bendix Aviation Corp., Teterboro, N. J.
Eastern Air Devices, Inc., 385 Central Ave., Dover, N. H.
Eicor, Inc., 1501 W. Congress St., Chicago 7, Ill.
Electric Indicator Co., Inc., Camp Ave., Springdale, Conn.
Electric Machinery Mfg. Co., 1331 N. E. Tyler St., Minneapolis 13, Minn.
Electric Products Co., 1725 Clarkstone Rd., Cleveland 12, Ohio
Electric Specialty Co., 211 South St., Stamford, Conn.
Electro Engineering Products Co., 609 W. Lake St., Chicago, Ill.
Gaston Power Tools, Inc., 14829 Loomis St., Harvey, Ill.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Georator Corp., Manassas, Va.
Gothard Mfg. Co., 2110 Clear Lake Ave., Springfield, Ill.
Great Lakes Electric Mfg. Co., 17 S. Desplaines St., Chicago 6, Ill.
Hallett Mfg. Co., 1601 Florence Ave., Inglewood, Calif.
Howard Industries, Inc., Divisions: Cyclohm Motor Corp., Electric Motor Corp., Racine, Wis.
Inet Div. of Leach Corp., 4441 Santa Fe Ave., Los Angeles 58, Calif.
Infra Electronic Corp., Roseland, N. J.
Instrument Motors, Acosta St., Stamford, Conn.
Kahlenberg Bros. Co., 12th & Monroe Sts., Two Rivers, Wis.
Leland Electric Co., Div. of American Machine & Foundry Co., 1501 Webster St., Dayton 1, Ohio
Mission-Western Engineers, Inc., 132 W. Colorado, Pasadena 1, Calif.
Motoresearch Co., 1600 Junction Ave., Racine, Wis.
National Pneumatic Co., Inc., & Holtzer-Cabot Divisions, 125 Amory St., Boston 19, Mass.
Red Bank Division, Bendix Aviation Corp., Eatontown, N. J.
Robbins & Myers, Inc., 1345 Lagonda Ave., Springfield, Ohio
Small Motors, Inc., 2076 Elston Ave., Chicago 14, Ill.
United Manufacturing Co., 41 Haig St., Hamden 14, Conn.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.

GENERATORS—Pulse

Aircraft-Marine Products, Inc., Chemicals & Dielectrics Div., 155 Park St., Elizabethtown, Pa.
American Electronic Laboratories, Inc., 641 Arch St., Philadelphia 6, Pa.
Andersen Laboratories, Inc., 39 Talcott Rd., West Hartford 10, Conn.
ATOMIC INSTRUMENT CO., 84 Massachusetts Ave., Cambridge 39, Mass. ADV. PG. Inside Back Cover
Atomlab, Inc., 489 Fifth Ave., New York 17, N. Y.
BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121
Berkshire Laboratories, 588 Beaver Pond Rd., Lincoln, Mass.
Bristol Engineering Corp., Lincoln Ave. & Pond St., Bristol 1, Pa.
Burroughs Corp., Electronic Instruments Div., 1209 Vine St., Philadelphia 7, Pa.
Chatham Electronics Corp., Livingston, N. J.
Cinema-Television Ltd., Worsley Bridge Rd., London, S. E. 26, England
CLEGG LABORATORIES, INC., 142 S. Livingston Ave., Livingston, N. J. ADV. PG. 110
Cubic Corp., 2841 Canon St., San Diego 6, Calif.
Daystrom Instrument Co., Archbald, Pa.

DeMornay-Bonardi, Inc., 780 S. Arroyo Parkway, Pasadena, Calif.
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
Electrical & Physical Instrument Corp., 42–19 27th St., Long Island City 1, N. Y.
Electronic Instrument Co., Inc., 84 Withers St., Brooklyn 11, N. Y.
Electronic Research Associates, Inc., 715 Main St., North Caldwell, N. J.
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
Empire Devices Products Corp., 38–15 Bell Blvd., Bayside, N. Y.
Federal Mfg. & Engineering Corp., 211 Steuben St., Brooklyn 5, N. Y.
Fleming Radio (Developments) Ltd., 18–20 Laystall St., London, E. C. 1, England
Franklin Electronics, Inc., 415 W. Pike St., Philadelphia 40, Pa.
Garod Radio Corp., 79 Washington St., Brooklyn 1, N. Y.
General Communication Co., 681 Beacon St., Boston 15, Mass.
General Precision Laboratory, Inc., Pleasantville, N. Y.
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
Hewlett-Packard Co., 395 Page Mill Rd., Palo Alto, Calif.
Hycon Mfg. Co., 2961 E. Colorado St., Pasadena 8, Calif.
Infra Electronic Corp., Roseland, N. J.
International Research Associates, 2221 Warwick Ave., Santa Monica, Calif.
Kahn & Co., Inc , 541 Windsor St., Hartford, Conn.
Kay Electric Co., 25 Maple Ave., Pine Brook, N. J.
Kearfott Co., Inc., 14844 Oxnard St., Van Nuys, Calif.
Kings Electronics Co., 40 Marbledale Rd., Tuckahoe, N. Y.
Lavoie Laboratories, Morganville, N. J.
Lee Laboratories, Inc., Genesee, Pa.
McShan Development Corp., 71 Murray St., New York 3, N. Y.
Magnavox Co., Components Div., Fort Wayne 4, Ind.
Magnetic Research Corp., 200 E. Center St., El Segundo, Calif.
Manson Laboratories, 207 Greenwich Ave., Stamford, Conn.
Marconi Instruments, Ltd., 23 Beaver St., New York 4, N. Y.
Measurements Corp., Boonton, N. J.
Mercury Electronic Co., Box 450, Red Bank, N. J.
Minnesota Electronics Corp., 1058 University Ave., St. Paul 4, Minn.
New London Instrument Co., P. O. Box 189, New London, Conn.
North American Philips Co., Inc., 750 S. Fulton Ave., Mt. Vernon, N. Y.
NUCLEAR SPECIALTY CO., P. O. Box 455, Center Moriches, N. Y. ADV. PG. 134, 138
Ossian Mfg. Co., Box 151A, Ossian, Ind.
Phebco Inc., 3640 Woodland Ave., Baltimore 15, Md.
Potter Instrument Co., 115 Cutter Mill Rd., Great Neck, N. Y.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
Radiation Instrument Co., P. O. Box 733, Silver Spring, Md.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
Rutherford Electronics Corp., 3707 S. Robertson Blvd., Culver City, Calif.
Sanders Associates, Inc., Nashua, N. H.
Sierra Electronic Corp., 1050 Brittan Ave., San Carlos, Calif.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Specialty Engineering Div. of Specialty Assembling & Packing Co., 79 Clifton Place, Brooklyn 38, N. Y.
Spencer-Kennedy Labs., Inc., 186 Massachusetts Ave., Cambridge 39, Mass.
TECHNICAL MEASUREMENT CORP., 140–142 State St., New Haven, Conn. ADV. PG. 128
Technitrol Engineering Corp., 2751 N. 4th St., Philadelphia 33, Pa.
Tektronix, Inc., P. O. Box 831, Portland 7, Ore.
Telechrome, Inc., 88 Merrick Rd., Amityville, N. Y.
Telecto Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Teletronics Laboratory, Inc., Kinkle St., Waterbury, N. Y.
Ultrasonic Corp., 640 Memorial Drive, Cambridge 39, Mass.
Walkirt Co., 145 W. Hazel, Inglewood, Calif.

GENERATORS—Signal

Airmec Ltd., High Wycombe, Buckinghamshire, England
Avion Instrument Corp., Div. of American Car & Foundry Co., 295 State Highway #17, Paramus, N. J.
Barker & Williamson, 235 Fairfield Ave., Upper Darby, Pa.
Boonton Radio Corp., Boonton, N. J.
Cinema-Television Ltd., Worsley Bridge Rd., London, S. E. 26, England
Clough Brengle Co., 6014 N. Broadway, Chicago, Ill.
Computing Devices of Canada, Ltd., P. O. Box 508, Ottawa 4, Ontario, Canada
Connecticut Telephone & Electric Corp., 70 Brittania St., Meriden, Conn.
Daven Co., The, 191 Central Ave., Newark 4, N. J.
Decade Instrument Co., P. O. Box 153, Caldwell, N. J.
DeMornay-Bonardi, Inc., 780 S. Arroyo Parkway, Pasadena, Calif.
Electric Indicator Co., Inc., Camp Ave., Springdale, Conn.
Electronic Instrument Co., Inc., 84 Withers St., Brooklyn 11, N. Y.
Electronic Measurements Co., Inc., Lewis St. & Maple Ave., Eatontown, N. J.
Elm Laboratories, 18 South Broadway, Dobbs Ferry, N. Y.
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
Federal Mfg. & Engineering Corp., 211 Steuben St., Brooklyn 5, N. Y.
Federal Telephone & Radio Co., A Div. of International Telephone & Telegraph Corp., 100 Kingsland Rd., Clifton, N. J.
Garod Radio Corp., 79 Washington St., Brooklyn 1, N. Y.
General Communication Co., 681 Beacon St., Boston 15, Mass.
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
Heath Co., Benton Harbor, Mich.
Hewlett-Packard Co., 395 Page Mill Rd., Palo Alto, Calif.
Hickok Electrical Instrument Co., 10514 Dupont Ave., Cleveland 8, Ohio
Hycon Mfg. Co., 2961 E. Colorado St., Pasadena 8, Calif.
Infra Electronic Corp., Roseland, N. J.
International Research Associates, 2221 Warwick Ave., Santa Monica, Calif.
Kahn & Co., Inc., 541 Windsor St., Hartford, Conn.
Kay Electric Co., 25 Maple Ave., Pine Brook, N. J.
Kearfott Co., Inc., 14844 Oxnard St., Van Nuys, Calif.
Kings Electronics Co., 40 Marbledale Rd., Tuckahoe, N. Y.
Krohn-Hite Instrument Co., 580 Massachusetts Ave., Cambridge 39, Mass.
Lavoie Laboratories, Morganville, N. J.
Leland Instruments Ltd., 22–23 Millbank, Westminster, S. W. 1, London, England
Magnavox Co., Components Div., Fort Wayne 4, Ind.
Manufacturers Engineering & Equipment Corp., York & Mill Rds., Hatboro, Pa.
Marconi Instruments Ltd., 23 Beaver St., New York 4, N. Y.
Maxson Corp., W. L., 460 W. 34th St., New York 1, N. Y.
Measurement Engineering Ltd., Arnprior, Ontario, Canada
Measurements Corp., Boonton, N. J.
Mercury Electronic Co., Box 450, Red Bank, N. J.
New London Instrument Co., P. O. Box 189, New London, Conn.
North American Philips Co., Inc., 750 S. Fulton Ave., Mt. Vernon, N. Y.
Northeastern Engineering, Inc., Manchester, N. H.
Phebco, Inc., 3640 Woodland Ave., Baltimore 15, Md.
Polarad Electronics Corp., 100 Metropolitan Ave., Brooklyn 11, N. Y.
Polytechnic Research & Development Co., Inc., 202 Tillary St., Brooklyn 1, N. Y.
Precise Development Corp., 2 Neil Court, Oceanside, N. Y.
Precision Apparatus Co., Inc., 92–27 Horace Harding Blvd., Elmhurst, N. Y.
Radio City Products Co., Inc., Centre & Glendale Sts., Easton, Pa.
Radio Corporation of America, Engineering Products Div., Camden, N. J.
RADIO CORPORATION OF AMERICA, TUBE DIV., Harrison, N. J. ADV. PG. 19
Radio Sonic Corp., 32 W. 22nd St., New York 10, N. Y.
Resdel Engineering Corp., 2351 Riverside Drive, Los Angeles 39, Calif.
Rollin Co., 2010 Lincoln Ave., Pasadena 3, Calif.
Sierra Electronic Corp., 1050 Brittan Ave., San Carlos, Calif.
Simpson Electric Co., Div. of American Gage & Machine Co., 5208 W. Kinzie St., Chicago 44, Ill.
Specialty Engineering Div. of Specialty Assembling & Packing Co., 79 Clifton Place, Brooklyn 38, N. Y.
Tektronix, Inc., P. O. Box 831, Portland 7, Ore.
Telechrome, Inc., 88 Merrick Rd., Amityville, N. Y.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Teletronics Laboratory, Inc., Kinkle St., Westbury, N. Y.
Tel-Instrument Co., 728 Garden St., Carlstadt, N. J.
Trad TV Corp., 1000 First Ave., Asbury Park, N. J.
Triplett Electrical Instrument Co., 286 Harmon Rd., Bluffton, Ohio
Ultrasonic Corp., 640 Memorial Drive, Cambridge 39, Mass.
Walkirt Co., 145 W. Hazel, Inglewood, Calif.
Waveforms, Inc., 333 Sixth Ave., New York 14, N. Y.
Wayne-Kerr Laboratories, Inc., New Malden, Surrey, England

GENERATORS—Square Wave

American Electronic Laboratories, Inc., 641 Arch St., Philadelphia 6, Pa.
Barker & Williamson, 235 Fairfield Ave., Upper Darby, Pa.
BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121
Bristol Engineering Corp., Lincoln Ave. & Pond St., Bristol 1, Pa.
Chatham Electronics Corp., Livingston, N. J.
Cinema-Television Ltd., Worsley Bridge Rd., London S. E. 26, England
CLEGG LABORATORIES, INC., 142 S. Livingston Ave., Livingston, N. J. ADV. PG. 110
Cubic Corp., 2841 Canon St., San Diego 6, Calif.
Daystrom Instrument Co., Archbald, Pa.
DeMornay-Bonardi, Inc., 780 S. Arroyo Parkway, Pasadena, Calif.
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
DuMont Labs., Inc., Allen B., 760 Bloomfield Ave., Clifton, N. J.
Electrical & Physical Instrument Corp., 42–19 27th St., Long Island City 1, N. Y.
Electro-Mechanical Research, Inc., 64 Main St., Ridgefield, Conn.
Electronic Instrument Co., Inc., 84 Withers St., Brooklyn 11, N. Y.
Elm Laboratories, 18 South Broadway, Dobbs Ferry, N. Y.
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
Fleming Radio (Development) Ltd., 18–20 Laystall St., London, E. C. 1, England
General Communication Co., 681 Beacon St., Boston 15, Mass.
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
Heath Co., Benton Harbor, Mich.
Hewlett-Packard Co., 395 Page Mill Rd., Palo Alto, Calif.
Hickok Electrical Instrument Co., 10514 Dupont Ave., Cleveland 8, Ohio
Hycon Mfg. Co., 2961 E. Colorado St., Pasadena 8, Calif.
Infra Electronic Corp., Roseland, N. J.
International Research Associates, 221 Warwick Ave., Santa Monica, Calif.
Kahn & Co., Inc., 541 Windsor St., Hartford, Conn.
Kearfott Co., Inc., 14844 Oxnard St., Van Nuys, Calif.
Krohn-Hite Instrument Co., 580 Massachusetts Ave., Cambridge 39, Mass.
Lavoie Laboratories, Morganville, N. J.
Linear Equipment Labs., Inc., Brightwater Place, Massapequa, N. Y.
Marconi Instruments, Ltd., 23 Beaver St., New York 4, N. Y.
Maxson Corp., W. L., 460 W. 34th St., New York 1, N. Y.
Measurement Engineering Ltd., Arnprior, Ontario, Canada
Measurements Corp., Boonton, N. J.
Mercury Electronic Co., Box 450, Red Bank, N. J.
New London Instrument Co., P. O. Box 189, New London, Conn.
Ossian Mfg. Co., Box 151A, Ossian, Ind.
Phebco Inc., 3640 Woodland Ave., Baltimore 15, Md.
Polarad Electronics Corp., 100 Metropolitan Ave., Brooklyn 11, N. Y.
Potter Instrument Co., 115 Cutter Mill Rd., Great Neck, N. Y.
Precise Development Corp., 2 Neil Court, Oceanside, N. Y.
Precision Apparatus Co., Inc., 92–27 Horace Harding Blvd., Elmhurst, N. Y.
Radio City Products Co., Inc., Centre & Glendale Sts., Easton, Pa.
Rutherford Electronics Corp., 3707 S. Robertson Blvd., Culver City, Calif.
Sanders Associates, Inc., Nashua, N. H.
Servo Corp. of America, 2020 Jericho Turnpike, New Hyde Park, N. Y.
Spencer-Kennedy Labs., Inc., 186 Massachusetts Ave., Cambridge 39, Mass.
Tektronix, Inc., P. O. Box 831, Portland 7, Ore.
Telechrome, Inc., 88 Merrick Rd., Amityville, N. Y.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Teletronics Laboratory, Inc., Kinkle St., Westbury, N. Y.

GENERATORS—Steam

See HEAT EXCHANGERS

GLASS APPARATUS—Special

Ace Glass, Inc., Vineland, N. J.
Aloe Scientific Div., A. S. Aloe Co., 5655 Kingsbury Blvd., St. Louis 12, Mo.
Burrell Corp., 2233 Fifth Ave., Pittsburgh, Pa.
Consolidated Vacuum Corp., 1775 Mt. Read Blvd., Rochester 3, N. Y.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 106
Dallons Laboratories, Inc., 5066 Santa Monica Blvd., Los Angeles, Calif.

DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Fischer Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Fredericks Co., George E., Bethayres, Pa.
Glass Engineering Laboratories, Belmont, Calif.
Greiner Co., Emil, 26 N. Moore St., New York 13, N. Y.
Jasonals Chemical Corp., 825 E. 42nd St., Brooklyn 10, N. Y.
Kahl Scientific Instrument Corp., P. O. Box 1166, El Cajon, Calif.
Kahle Engineering Co., 1307 Seventh St., North Bergen, N. J.
Kontes Glass Co., Spruce St., Vineland, N. J.
LERMAC INC., 5303 Adeline St., Oakland, Calif. ADV. PG. 114
Naer Corp., 2301 S. Purdue Ave., West Los Angeles, Calif.
Phoenix Precision Instrument Co., 3803–05 North 5th St., Philadelphia, Pa.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
Sargent & Co., E. H., 4647 W. Foster Ave., Chicago 30, Ill.
Scientific Glass Apparatus Co., Inc., 100 Lakewood Terrace, Bloomfield, N. J.
Special Glass Products Co., 10 W. 33rd St., New York 1, N. Y.
Specialty Glass Co., 536 Lake Shore Drive, Chicago 11, Ill.
Tinsley Laboratories, Inc., 2526 Grove St., Berkeley 4, Calif.
Vacuum Tube Products, 506 S. Cleveland St., Oceanside, Calif.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

GLASS VIEWING WINDOWS

See VIEWING EQUIPMENT

GLASSWARE—Laboratory

Ace Glass, Inc., Vineland, N. J.
Armstrong Cork Co., 1010 Concord St., Lancaster, Pa.
Bache & Co., Semon, 636 Greenwich St., New York 14, N. Y.
Burrell Corp., 2233 Fifth Ave., Pittsburgh, Pa.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Consolidated Vacuum Corp., 1775 Mt. Read Blvd., Rochester 3, N. Y.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 106
Daylite Vacuum Products Co., 5207 N. Milwaukee Ave., Chicago 30, Ill.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Fish-Schurman Corp., 70 Portman Rd., New Rochelle, N. Y.
Freed, Inc., J. Melvin, Perkasie, Pa.
Greiner Co., Emil, 26 N. Moore St., New York 13, N. Y.
Hellige, Inc., 877 Stewart Ave., Long Island City 1, N. Y.
Jasonals Chemical Corp., 825 E. 42nd St., Brooklyn 10, N. Y.
Kahl Scientific Instrument Corp., P. O. Box 1166, El Cajon, Calif.
Kontes Glass Co., Spruce St., Vineland, N. J.
LERMAC INC., 5303 Adeline St., Oakland, Calif. ADV. PG. 114
Milwaukee Glass Works, Inc., 2338 N. 30th St., Milwaukee, Wis.
Phoenix Precision Instrument Co., 3803–05 N. 5th St., Philadelphia, Pa.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
Rascher & Betzhold, Inc., 730 N. Franklin St., Chicago 10, Ill.
Sargent & Co., E. H., 4647 W. Foster Ave., Chicago 30, Ill.
Scientific Glass Apparatus Co., Inc., 100 Lakewood Terrace, Bloomfield, N. J.
Special Glass Products Co., 10 W. 33rd St., New York 1, N. Y.
Specialty Glass Co., 536 Lake Shore Drive, Chicago 11, Ill.
Wakefield Industries, Inc., 5108 Grove St., Skokie, Ill.
Wheaton Co., T. C., Millville, N. J.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

GOGGLES—Safety

American Optical Co., 28 Mechanic St., Southbridge, Mass.
Bausch & Lomb Optical Co., 630 St. Paul St., Rochester 2, N. Y.
Bullard Co., E. D., 275 Eighth St., San Francisco 3, Calif.
Davis Emergency Equipment Co., Inc., 252 Halleck St., Newark, N. J.
Mine Safety Appliances Co., Braddock, Thomas & Meade Sts., Pittsburgh 8, Pa.
Willson Products, Inc., Reading, Pa.

GRAPHITE

See CARBON—Graphite

HEAT EXCHANGERS

Aerco Corp., Paris Ave., Northvale, N. J.
American Copper & Brass Works, Inc., Cincinnati 2, Ohio
American Locomotive Co., Bldg. 143, Schenectady, N. Y.
Babcock & Wilcox Co., 161 E. 42nd St., New York 17, N. Y.
BLICKMAN, INC., S., 7900 Gregory Ave., Weehawken, N. J. ADV. PG. 32
Bowser Technical Refrigeration Div. of Bowser, Inc., Terryville, Conn.
Brighton Copper Works, Inc., 820 State Ave., Cincinnati 4, Ohio
Clifford Mfg. Co., Grove St., Waltham, Mass.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 106
Eclipse Fuel Engineering Co., 1100 Buchanan, Rockford, Ill.
Electric Steel Foundry Co., 2141 N. W. 25th Ave., Portland 10, Ore.
Fansteel Metallurgical Corp., North Chicago, Ill.
Foster Wheeler Corp., 165 Broadway, New York 6, N. Y.
GENERAL ELECTRIC CO., ATOMIC POWER EQUIPMENT COMPONENT, 2900 Campbell Ave., Schenectady 6, N. Y. ADV. PG. 2–6
Harris, Inc., 61 S. E. Yamhill, Portland, Ore.
Knapp Mills, Inc., 23–15 Borden Ave., Long Island City 1, N. Y.
Leader Iron Works, Inc., 2110 N. Jasper, Decatur, Ill.
Little, Inc., Arthur D., Acorn Lane, Cambridge 42, Mass.
Nukem Products Corp., 111 Colgate Ave., Buffalo 20, N. Y.
Patterson-Kelley Co., Inc., East Stroudsburg, Pa.
Pfaudler Co., 1002 West Ave., Rochester, N. Y.
Ratron Mfg. Co., 7 Schoonmaker Lane, Woodstock, N. Y.
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
SOLAR AIRCRAFT CO., 2200 Pacific Highway, San Diego 12, Calif. ADV. PG. 28
Steiner-Ives Co., Springfield Rd., Union, N. J.
Struthers-Wells Corp., Warren, Pa.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Tenney Engineering, Inc., 1090 Springfield Rd., Union, N. J.
Trane Company, The, La Crosse, Wis.
Ultrasonic Corp., 640 Memorial Drive, Cambridge 39, Mass.
United Chromium, Incorporated, 100 E. 42nd St., New York, N. Y.
Worthington Corp., Harrison, N. J.
York Corp., York, Pa.

HEATERS—Electric

Acme Electric Heating Co., Inc., 1205 Washington St., Boston, Mass.
Ambory Corp., 21320 Stephenson, Hazel Park, Mich.
American Instrument Co., Inc., 8030 Georgia Ave., Silver Spring, Md.
Clarostat Mfg. Co., Inc., Dover, N. H.
Cooper Co., D. C., 1467 S. Michigan Ave., Chicago, Ill.
Cox & Co., 115 E. 23rd St., New York 10, N. Y.
Cutler-Hammer, Inc., 412 N. 12th St., Milwaukee 1, Wis.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
GENERAL ELECTRIC CO., ATOMIC POWER EQUIPMENT COMPONENT, 2900 Campbell Ave., Schenectady 6, N. Y. ADV. PG. 2–6
Hevi Duty Electric Co., 4212 W. Highland Ave., Milwaukee 1, Wis.
Industrial Engineering & Equipment Co., 711 S. Theresa, St. Louis 3, Mo.
Labline, Inc., 217 N. Desplaines St., Chicago 6, Ill.
Lesa, Via Bergamo 21, Italy
National Carbon Co., A Division of Union Carbide & Carbon Corp., 30 E. 42nd St., New York 17, N. Y.
Precision Inc., 730 Lyndale Ave., N., Minneapolis, Minn.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Syntron Corp., 355 Lexington, Homer City, Pa.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Vulcan Electric Co., 88 Holten St., Danvers, Mass.
Watlow Electric Mfg. Co., 1376 Ferguson Ave., St. Louis 14, Mo.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.

HEATERS—Immersion

Acme Electric Heating Co., Inc., 1205 Washington St., Boston, Mass.
Ambory Corp., 21320 Stephenson, Hazel Park, Mich.
American Instrument Co., Inc., 8030 Georgia Ave., Silver Spring, Md.
Amersil Co., Inc., 683 Ramsey Ave., Hillside, N. J.
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 10
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Cooper Co., D. C., 1467 S. Michigan Ave., Chicago, Ill.
Cutler-Hammer, Inc., 412 N. 12th St., Milwaukee 1, Wis.
Eclipse Fuel Engineering Co., 1100 Buchanan, Rockford, Ill.
Fansteel Metallurgical Corp., North Chicago, Ill.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Industrial Engineering & Equipment Co., 711 S. Theresa, St. Louis 3, Mo.
Labline, Inc., 217 N. Desplaines St., Chicago 6, Ill.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Syntron Corp., 355 Lexington, Homer City, Pa.
Thermal American Fused Quartz Co., Inc., 18–20 Salem St., Dover, N. J.
United Chromium, Incorporated, 100 E. 42nd St., New York, N. Y.
Vulcan Electric Co., 88 Holten St., Danvers, Mass.
Watlow Electric Mfg. Co., 1376 Ferguson Ave., St. Louis 14, Mo.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

HEATERS—Induction, High Frequency

Airmec Ltd., High Wycombe, Buckinghamshire, England
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Lindberg Engineering Co., 2450 W. Hubbard St., Chicago 12, Ill.
Marion Electrical Instrument Co., 402 Canal St., Manchester, N. H.
Peschel Electronics, Inc., 13 Garden St., New Rochelle, N. Y.
Radio Sonic Corp., 32 W. 22nd St., New York 10, N. Y.
Resdel Engineering Corp., 2351 Riverside Drive, Los Angeles 39, Calif.
Scientific Electric, 107–119 Monroe St., Garfield, N. J.
Stewart Engineering Co., P. O. Box 277, Soquel, Calif.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.

HEATERS—Infra Red

Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Cooper Co., D. C., 1467 S. Michigan Ave., Chicago, Ill.
Syntron Corp., 355 Lexington, Homer City, Pa.
Thermal American Fused Quartz Co., Inc., 18–20 Salem St., Dover, N. J.
Watlow Electric Mfg. Co., 1376 Ferguson St., St. Louis 14, Mo.

HEATERS—Micro

Ambory Corp., 21320 Stephenson, Hazel Park, Mich.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.

HEAVY WATER

See WATER—Heavy

HOODS—Chemical

Alberene Stone Corp. of Virginia, 419 Fourth Ave., New York 16, N. Y.
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 10
BLICKMAN, INC., S., 7900 Gregory Ave., Weehawken, N. J. ADV. PG. 32
Brown Morse Co., Muskegon, Mich.
Consolidated Siphon Supply Co., 24 Wooster St., New York, N. Y.
Electro Chemical Supply & Engineering Co., 750 Broad St., Emmaus, Pa.
Emerson-Sack-Warner Corp., 150 Dorchester Ave., South Boston 27, Mass.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Kewaunee Mfg. Co., 5083 S. Center St., Adrian, Mich.
Knapp Mills, Inc., 23–15 Borden Ave., Long Island City 1, N. Y.
Labline, Inc., 217 N. Desplaines St., Chicago 6, Ill.
LENNARD CO., INC., P. M., 671 Bergen St., Brooklyn 38, N. Y. ADV. PG. 26

LERMAC INC., 5303 Adeline St., Oakland, Calif. ADV. PG. 114
Metalab Equipment Corp., 270 Duffy Ave., Hicksville, N. Y.

HOSE—Acid Resisting

Alpha Metals, Inc., P. O. Box 34, 56 Water St., Jersey City 4, N. J.
Atlantic Metal Hose Co., Inc., 308 Dyckman St., New York 34, N. Y.
Flexonics Corp., 1315 S. Third Ave., Maywood, Ill.
Goodyear Tire & Rubber Co., Akron, Ohio
Minor Rubber Co., 49 Ackerman St., Bloomfield, N. J.
Republic Rubber Division of Lee Rubber & Tire Corp., Youngstown, Ohio
Shamban & Co., W. S., 11617 W. Jefferson Blvd., Culver City, Calif.
Stillman Rubber Co., 5811 Marilyn Ave., Culver City, Calif.
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.
U. S. Stoneware Co., Akron 9, Ohio
Vanton Pump & Equipment Corp., 350 Fifth Ave., New York 1, N. Y.

HOSE—Metal, Flexible

Air Associates, Inc., Teterboro, N. J.
American Brass Co., Waterbury 20, Conn.
Atlantic Metal Hose Co., Inc., 308 Dyckman St., New York 34, N. Y.
Flexonics Corp., 1315 S. Third Ave., Maywood, Ill.
Hallett Mfg. Co., 1601 Florence Ave., Inglewood, Calif.
Pantatron Ltd., Teleflex Works, High Rd., Chadwell Heath, Essex, England
Titeflex, Inc., 500 Frelinghuysen Ave., Newark 5, N. J.
Zallea Brothers, 800 Locust St., Wilmington, Del.

HOSE—Plastic

Ace Glass, Inc., Vineland, N. J.
Electronic Mechanics, Inc., 101 Clifton Blvd., Clifton, N. J.
Goodyear Tire & Rubber Co., Akron, Ohio
Irvington Varnish & Insulator Div. of Minnesota Mining & Mfg. Co., 10 Argyle Terrace, Irvington, N. J.
Minor Rubber Co., 49 Ackerman St., Bloomfield, N. J.
Pantatron Ltd., Teleflex Works, High Rd., Chadwell Heath, Essex, England
Republic Rubber Division of Lee Tire & Rubber Corp., Youngstown, Ohio
Shamban & Co., W. S., 11617 W. Jefferson Blvd., Culver City, Calif.
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.
U. S. Stoneware Co., Akron 9, Ohio
Vanton Pump & Equipment Corp., 350 Fifth Ave., New York 1, N. Y.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

HOSE—Vacuum, Flexible

Ace Glass, Inc., Vinsland, N. J.
Air Associates, Inc., Teterboro, N. J.
Atlantic Metal Hose Co., Inc., 308 Dyckman St., New York 34, N. Y.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Consolidated Vacuum Corp., 1775 Mt. Read Blvd., Rochester 3, N. Y.
Flexonics Corp., 1315 S. Third Ave., Maywood, Ill.
Goodyear Tire & Rubber Co., Akron, Ohio
Minor Rubber Co., 49 Ackerman St., Bloomfield, N. J.
Pantatron Ltd., Teleflex Works, High Rd., Chadwell Heath, Essex, England
Republic Rubber Division of Lee Tire & Rubber Corp., Youngstown, Ohio
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.
U. S. Stoneware Co., Akron 9, Ohio
WELCH SCIENTIFIC CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148

HOT PLATES

Acme Electric Heating Co., Inc., 1205 Washington St., Boston, Mass.
Ambory Corp., 21320 Stephenson, Hazel Park, Mich.
Carver Inc., Fred S., 1 Chatham Rd., Summit, N. J.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Cooper Co., D. C., 1467 S. Michigan Ave., Chicago, Ill.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Hevi Duty Electric Co., 4212 W. Highland Blvd., Milwaukee 1, Wis.
Labline, Inc., 217 N. Desplaines St., Chicago 6, Ill.
Laboratory Furniture Co., Inc., P. O. Box 590, Mineola, N. Y.
Lindberg Engineering Co., 2450 W. Hubbard St., Chicago 12, Ill.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Thermo Electric Mfg. Co., 465 Huff, Dubuque, Ia.
Watlow Electric Mfg. Co., 1376 Ferguson Ave., St. Louis 14, Mo.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

HOUSINGS—Metal

Babcock & Wilcox Co., 161 E. 42nd St., New York 17, N. Y.
BLICKMAN, INC., S., 7900 Gregory Ave., Weehawken, N. J. ADV. PG. 32
Bud Radio, Inc., 2118 E. 55th St., Cleveland 3, Ohio
Churchill Lighting Corp., 344 Franklin St., Melrose 76, Mass.
Consolidated Siphon Supply Co., 24 Wooster St., New York, N. Y.
Day Co., The, 820 Third Ave., N. E., Minneapolis 13, Minn.
Emerson-Sack-Warner Corp., 150 Dorchester Ave., South Boston 27, Mass.
Falstrom Company, 7 Falstrom Court, Passaic, N. J.
FARREL-BIRMINGHAM CO., INC., Ansonia, Conn. ADV. PG. 111
Imhof Ltd., Alfred, 112 New Oxford St., London, W. C. 1, England
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Watson Mfg. Co., Inc., Jamestown, N. Y.

HUMIDIFIERS

American Instrument Co., Inc., 8030 Georgia Ave., Silver Spring, Md.
Carrier Corp., 300 S. Geddes St., Syracuse, N. Y.
Conrad, Inc., 141 Jefferson St., Holland, Mich.
Trane Company, The, La Crosse, Wis.
York Corp., York, Pa.

HYGROMETERS

American Instrument Co., Inc., 8030 Georgia Ave., Silver Spring, Md.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Fielden Instrument Div., Robertshaw-Fulton Controls Co., 2920 N. 4th St., Philadelphia 33, Pa.
GENERAL MILLS, INC., MECHANICAL DIV., 1620 Central Ave., N. E., Minneapolis, Minn. ADV. PG. 101
Gits Molding Corp., 4600 W. Huron St., Chicago 44, Ill.
Kahl Scientific Instrument Corp., P. O. Box 1166, El Cajon, Calif.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Back Cover
Moeller Instrument Co., 132nd St. at 89th Ave., Richmond Hill 18, N. Y.
Nurnberg Thermometer Co., Inc., 124 Livingston St., Brooklyn 2, N. Y.
Photobell Co., 116 Nassau St., New York 7, N. Y.
Powers Regulator Co., The, 3400 Oakton, Skokie, Ill.
Rascher & Betzold, Inc., 730 N. Franklin St., Chicago 10, Ill.
Sargent & Co., E. H., 4647 W. Foster Ave., Chicago 30, Ill.
Serdex, Inc., 91 Cambridge St., Boston, Mass.
Taylor Instrument Companies, 95 Ames St., Rochester, N. Y.
Victory Engineering Corp., Springfield Rd., Union, N. J.
Weksler Thermometer Corp., Martinique Bldg., 49 W. 32nd St., New York 1, N. Y.
Weston Electrical Instrument Corp., 614 Frelinghuysen Ave., Newark 5, N. J.

INDICATORS

See also CONTROLS
GAGES
METERS

INDICATORS—Film Thickness

American Instrument Co., Inc., 8030 Georgia Ave., Silver Spring, Md.
Automatic Temperature Control Co., Inc., 5206 Pulaski Ave., Philadelphia 44, Pa.
Branson Instruments, Inc., 438 Fairfield Ave., Stamford, Conn.
Custom Scientific Instruments, Inc., P. O. Box 170, Arlington, N. J.
EKCO ELECTRONICS LTD., EKCO WORKS, Southend-on-Sea, Essex, England. ADV. PG. 127
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Gulton Mfg. Corp., 212 Durham Ave., Metuchen, N. J.
Hommel Co., O., 209–213 Fourth Ave., Pittsburgh, Pa.
Infra Electronic Corp., Roseland, N. J.
Instrument Development Labs., Inc., 163 Highland Ave., Needham Heights, Mass.
Isotope Products, Ltd., Davis Rd., Oakville, Ontario, Canada
JORDAN ELECTRONIC MFG. CO., INC., Union Bldg., 119 E. Union St., Pasadena 1, Calif. ADV. PG. 129, 136
Minnesota Electronics Corp., 1058 University Ave., St. Paul 4, Minn.
Ohmart Corp., 2236 Bogen St., P. O. Box 67, Sta. B, Cincinnati 22, Ohio
Photobell Co., 116 Nassau St., New York 7, N. Y.
Standard Electronics Research Corp., 2 East End Ave., New York 21, N. Y.
Swartwout Co., 18547 Euclid Ave., Cleveland, Ohio
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23

INDICATORS—Fluid Flow

Askania Regulator Co., 240 E. Ontario St., Chicago 11, Ill.
Automatic Temperature Control Co., Inc., 5206 Pulaski Ave., Philadelphia 44, Pa.
Avien, Inc., 58–15 Northern Blvd., Woodside 77, N. Y.
B-I-F Industries, Inc., P. O. Box 1342, Providence, R. I.
BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121
Bogue Electric Mfg. Co., 52 Iowa Ave., Paterson 3, N. J.
Bristol Co., Waterbury 20, Conn.
Brooks Rotameter Co., Box A-1347, Lansdale, Pa.
Builders-Providence, Inc., Div. of B-I-F Industries, Inc., 530 Harris Ave., Providence 1, R. I.
Eclipse-Pioneer Div., Bendix Aviation Corp., Teterboro, N. J.
Federal Telephone & Radio Co., A Div. of International Telephone & Telegraph Corp., 100 Kingsland Rd., Clifton, N. J.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
GENERAL ELECTRIC CO., ATOMIC POWER EQUIPMENT COMPONENT, 2900 Campbell Ave., Schenectady 6, N. Y. ADV. PG. 2–6
Hagan Corp., 323 Fourth Ave., Pittsburgh 22, Pa.
Hastings Instrument Co., Superhighway at Pine Ave., Hampton, Va.
Hays Corp., Michigan City, Ind.
Imperial Brass Mfg. Co., 1200 W. Harrison St., Chicago 7, Ill.
Infra Electronic Corp., Roseland, N. J.
Kybernetes Co., 1100 Raymond Blvd., Newark, N. J.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Back Cover
Nuclear Research Corp., Southampton, Pa.
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
Simplex Valve & Meter Co., 68th & Upland Sts., Philadelphia 42, Pa.
Swartwout Co., 18547 Euclid Ave., Cleveland, Ohio
Taylor Instrument Companies, 95 Ames St., Rochester, N. Y.
Ultrasonic Corp., 640 Memorial Drive, Cambridge 39, Mass.
U. S. Gauge Div., American Machine and Metals, Inc., Sellersville, Pa.

INDICATORS—Humidity

American Instrument Co., Inc., 8030 Georgia Ave., Silver Spring, Md.
Bristol Co., Waterbury 20, Conn.
CAMBRIDGE INSTRUMENT CO., INC., Grand Central Terminal, New York 17, N. Y. ADV. PG. 136
Cooper Co., D. C., 1467 S. Michigan Ave., Chicago, Ill.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Friez Instrument Div. of Bendix Aviation Corp., 1454 Taylor Ave., Baltimore 4, Md.
General Controls Co., Glendale 1, Calif.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Gits Molding Corp., 4600 W. Huron St., Chicago 44, Ill.
Hill & Co., E. Vernon, P. O. Box 189, Lake Geneva, Wis.
Infra Electronic Corp., Roseland, N. J.
Johnson Service Co., 507 E. Michigan St., Milwaukee 2, Wis.
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave. S., Minneapolis, Minn.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Back Cover
Photobell Co., 116 Nassau St., New York 7, N. Y.
Serdex, Inc., 91 Cambridge St., Boston, Mass.
Taylor Instrument Companies, 95 Ames St., Rochester, N. Y.
Thermo Instrument Co., P. O. Box 336, 1310 Old County Rd., Belmont, Calif.
Victory Engineering Corp., Springfield Rd., Union, N. J.
Weksler Thermometer Corp., Martinique Bldg., 49 W. 32nd St., New York 1, N. Y.
Weston Electrical Instrument Corp., 614 Frelinghuysen Ave., Newark 5, N. J.

INDICATORS—Liquid Level

Atomic Energy of Canada, Ltd., Commercial Products Div., P. O. Box 93, Ottawa, Ontario, Canada
Automatic Temperature Control Co., Inc., 5206 Pulaski Ave., Philadelphia 44, Pa.
Avien, Inc., 58–15 Northern Blvd., Woodside 77, N. Y.
BENDIX AVIATION CORP., CINCINNATI DIV., 203 W. Third St., Cincinnati 2, Ohio. ADV. PG. 14
BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121
B-I-F Industries, Inc., P. O. Box 1342, Providence, R. I.
Bourns Laboratories, 6135 Magnolia Blvd., Riverside, Calif.
Bristol Co., Waterbury 20, Conn.
Builders-Providence, Inc., Div. of B-I-F Industries, Inc., 530 Harris Ave., Providence 1, R. I.
Eclipse-Pioneer Div., Bendix Aviation Corp., Teterboro, N. J.
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
Federal Telephone & Radio Co., A Div. of International Telephone & Telegraph Corp., 100 Kingsland Rd., Clifton, N. J.
Fielden Instrument Div., Robertshaw-Fulton Controls Co., 2920 N. 4th St., Philadelphia 33, Pa.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Friez Instrument Div. of Bendix Aviation Corp., 1454 Taylor Ave., Baltimore 4, Md.
General Controls Co., Glendale 1, Calif.
GENERAL ELECTRIC CO., ATOMIC POWER EQUIPMENT COMPONENT, 2900 Campbell Ave., Schenectady 6, N. Y. ADV. PG. 2–6
Gulton Mfg. Corp., 212 Durham Ave., Metuchen, N. J.
Hagan Corp., 323 Fourth Ave., Pittsburgh 22, Pa.
Hays Corp., Michigan City, Ind.
Inflico, Inc., P. O. Box 5033, Tucson, Ariz.
Infra Electronic Corp., Roseland, N. J.
Isotope Products Ltd., Davis Rd., Oakville, Ontario, Canada
JORDAN ELECTRONIC MFG. CO., INC., Union Bldg., 119 E. Union St., Pasadena 1, Calif. ADV. PG. 129, 136
Kybernetes Co., 1100 Raymond Blvd., Newark, N. J.
Larson Instrument Co., 24 Orchard St., Tarrytown, N. Y.
Lumenite Electric Co., 407 S. Dearborn St., Chicago 5, Ill.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave. S., Minneapolis, Minn.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Back Cover
Nuclear Research Corp., Southampton, Pa.
Ohmart Corp., 2236 Bogen St., P. O. Box 67, Sta. B, Cincinnati 22, Ohio
Photobell Co., 116 Nassau St., New York 7, N. Y.
Precision Radiation Instruments, Inc., 2235 S. La Brea Ave., Los Angeles 16, Calif.
Simmonds Aerocessories Inc., 105 White Plains Rd., Tarrytown, N. Y.
Swartwout Co., 18547 Euclid Ave., Cleveland, Ohio
Taylor Instrument Companies, 95 Ames St., Rochester, N. Y.
Thermo Instrument Co., P. O. Box 336, 1310 Old County Rd., Belmont, Calif.
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
Trimount Instrument Co., 3119 W. Lake St., Chicago 12, Ill.
Ultrasonic Corp., 640 Memorial Drive, Cambridge 39, Mass.
Victory Engineering Corp., Springfield Rd., Union, N. J.
Wallace & Tiernan Inc., Belleville 9, N. J.

INDICATORS—Pressure

Automatic Temperature Control Co., Inc., 5206 Pulaski Ave., Philadelphia 44, Pa.
BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121
Bourns Laboratories, 6135 Magnolia Blvd., Riverside, Calif.
Bristol Co., Waterbury 20, Conn.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
CONSOLIDATED ENGINEERING CORP., 300 N. Sierra Madre Villa, Pasadena 15, Calif. ADV. PG. Inside Front Cover
Doelcam Corp., 1400 Soldiers Field Rd., Boston 35, Mass.
Eclipse-Pioneer Div., Bendix Aviation Corp., Teterboro, N. J.
Electric Auto-Lite Co., Instrument & Gauge Div., Toledo 1, Ohio
Electro Products Labs., Inc., 4501 N. Ravenswood, Chicago 6, Ill.
Electronic Engineering Associates Ltd., 1040 Brittan Ave., San Carlos, Calif.
Federal Telephone & Radio Co., A Div. of International Telephone & Telegraph Corp., 100 Kingsland Rd., Clifton, N. J.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
FORD INSTRUMENT CO., DIV. OF SPERRY CORP., 31–10 Thomson Ave., Long Island City, N. Y. ADV. PG. 105
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
General Controls Co., Glendale 1, Calif.
Genisco, Inc., 2233 Federal Ave., Los Angeles, Calif.
Giannini & Co., G. M., Pasadena 1, Calif.
Gulton Mfg. Corp., 212 Durham Ave., Metuchen, N. J.
Hagan Corp., 323 Fourth Ave., Pittsburgh 22, Pa.
Hastings Instrument Co., Super Highway at Pine Ave., Hampton, Va.
Hays Corp., Michigan City, Ind.
Heise Bourdon Tube Co., Inc., Newtown, Conn.
Hill & Co., E. Vernon, P. O. Box 189, Lake Geneva, Wis.
Industrial Electronics, Inc., 8060 Wheeler St., Detroit 10, Mich.
Infra Electronic Corp., Roseland, N. J.
Johnson Service Co., 507 E. Michigan St., Milwaukee 2, Wis.
Kahn & Co., Inc., 541 Windsor St., Hartford, Conn.
Kybernetes Co., 1100 Raymond Blvd., Newark, N. J.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave. S., Minneapolis, Minn.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Back Cover
Northeastern Engineering, Inc., Manchester, N. H.
Photocon Research Products, 421 N. Foothill Blvd., Pasadena 7, Calif.
Scientific Glass Apparatus Co., Inc., 100 Lakewood Terrace, Bloomfield, N. J.
Statham Laboratories, Inc., 12401 W. Olympic Blvd., Los Angeles 64, Calif.
Swartwout Co., 18547 Euclid Ave., Cleveland, Ohio
Taylor Instrument Companies, 95 Ames St., Rochester, N. Y.
Thwing-Albert Instrument Co., Penn St. & Pulaski Ave., Philadelphia 44, Pa.
U. S. Gauge Div., American Machine and Metals, Inc., Sellersville, Pa.
Vacuum Tube Products, 506 S. Cleveland St., Oceanside, Calif.
Wallace & Tiernan Inc., Belleville 9, N. J.
Weksler Thermometer Corp., Martinique Bldg., 49 W. 32nd St., New York 1, N. Y.
Weston Electrical Instrument Corp., 614 Frelinghuysen Ave., Newark 5, N. J.

INDICATORS—Radiation

See CHAMBERS, Ionization; COUNTERS; G-M APPARATUS; SCALERS etc.

INDICATORS—Temperature

See also THERMOCOUPLES

Assembly Products, Inc., Chagrin Falls 6, Ohio
Avien, Inc., 58–15 Northern Blvd., Woodside 77, N. Y.
Beckman & Whitley, Inc., San Carlos, Calif.
BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121
Bristol Co., Waterbury 20, Conn.
CAMBRIDGE INSTRUMENT CO., INC., Grand Central Terminal, New York 17, N. Y. ADV. PG. 136
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
DeJur-Amsco Corp., 45–01 Northern Blvd., Long Island City 1, N. Y.
Doelcam Corp., 1400 Soldiers Field Rd., Boston 35, Mass.
Edison, Inc., Thomas A., Instrument Div., West Orange, N. J.
Electric Auto-Lite Co., Instrument & Gauge Div., Toledo 1, Ohio
Engelhard, Inc., Charles, 850 Passaic St., East Newark, N. J.
Federal Telephone & Radio Co., A Div. of International Telephone & Telegraph Corp., 100 Kingsland Rd., Clifton, N. J.
Fenwal, Inc., Ashland, Mass.
Fielden Instrument Div., Robertshaw-Fulton Controls Co., 2920 N. 4th St., Philadelphia 33, Pa.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Friez Instrument Div. of Bendix Aviation Corp., 1454 Taylor Ave., Baltimore 4, Md.
General Controls Co., Glendale 1, Calif.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Giannini & Co., G. M., Pasadena 1, Calif.
Greiner Co., Emil, 26 N. Moore St., New York 13, N. Y.
Gulton Mfg. Corp., 212 Durham Ave., Metuchen, N. J.
Hagan Corp., 323 Fourth Ave., Pittsburgh 22, Pa.
Hays Corp., Michigan City, Ind.
Hevi Duty Electric Co., 4212 W. Highland Ave., Milwaukee 1, Wis.
Hill & Co., E. Vernon, P. O. Box 189, Lake Geneva, Wis.
Hycon Mfg. Co., 2961 E. Colorado St., Pasadena 8, Calif.
Industrial Controls, Inc., 525 N. Noble St., Chicago 22, Ill.
Infra Electronic Corp., Roseland, N. J.
J-B-T Instruments, Inc., 441 Chapel St., New Haven 8, Conn.
Johnson Service Co., 507 E. Michigan St., Milwaukee 2, Wis.
Kybernetes Co., 1100 Raymond Blvd., Newark, N. J.
Larson Instrument Co., 24 Orchard St., Tarrytown, N. Y.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 131
Lindberg Engineering Co., 2450 W. Hubbard St., Chicago 12, Ill.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave. S., Minneapolis, Minn.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Back Cover
Minnesota Electronics Corp., 1058 University Ave., St. Paul 4, Minn.
Moeller Instrument Co., 132nd St. and 89th Ave., Richmond Hill, N. Y.
Partlow Corp., 2 Campion Rd., New Hartford, N. Y.
Powers Regulator Co., The, 3400 Oakton, Skokie, Ill.
Pyrometer Instrument Co., Inc., Bergenfield, N. J.
Sensitive Research Instrument Corp., 9 Elm Ave., Mt. Vernon, N. Y.
Standard Electronics Research Corp., 2 East End Ave., New York 21, N. Y.
Swartwout Co., 18547 Euclid Ave., Cleveland, Ohio
Taylor Instrument Companies, 95 Ames St., Rochester, N. Y.
Thwing-Albert Instrument Co., Penn St. & Pulaski Ave., Philadelphia 44, Pa.
U. S. Gauge Div., American Machine and Metals, Inc., Sellersville, Pa.
Victory Engineering Corp., Springfield Rd., Union, N. J.
Weksler Thermometer Corp., Martinique Bldg., 49 W. 32nd St., New York 1, N. Y.
West Instrument Corp., 525 N. Noble St., Chicago 22, Ill.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.
Weston Electrical Instrument Corp., 614 Frelinghuysen Ave., Newark 5, N. J.
Wheelco Instruments Div., Barber-Colman Co., Rockford, Ill.
Winslow Co., Inc., 9 Liberty St., Newark, N. J.
Yellow Springs Instrument Co., Inc., P. O. Box 106, Yellow Springs, Ohio

INDICATORS—Timing

See TIMERS

INDICATORS—Vacuum

Automatic Temperature Control Co., Inc., 5206 Pulaski Ave., Philadelphia 44, Pa.
Bristol Co., Waterbury 20, Conn.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
CENTRAL SALES & MFG. CORP., 2 Richwood Place, Denville, N. J. ADV. PG. 140
Clark Instruments, Div. of National Electrical Machine Shops, Inc., 919 Jesup-Blair Drive, Silver Spring, Md.
CLEGG LABORATORIES, INC., 142 S. Livingston Ave., Livingston, N. J. ADV. PG. 110
Consolidated Vacuum Corp., 1775 Mt. Read Blvd., Rochester 3, N. Y.
Doelcam Corp., 1400 Soldiers Field Rd., Boston 35, Mass.
Eisler Engineering Co., 760 S. 13th St., Newark 3, N. J.
Electric Auto-Lite Co., Instrument & Gauge Div., Toledo 1, Ohio
Ferranti Electric, Inc., 30 Rockefeller Plaza, New York 20, N. Y.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Fredericks Co., George E., Bethayres, Pa.
GENERAL ELECTRIC CO., APPARTUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Giannini & Co., G. M., Pasadena 1, Calif.
Hagan Corp., 323 Fourth Ave., Pittsburgh 22, Pa.
Hastings Instrument Co., Super Highway at Pine Ave., Hampton, Va.
Heise Bourdon Tube Co., Inc., Newtown, Conn.
High Vacuum Equipment Corp., 349 Lincoln St., Hingham, Mass.
Infra Electronic Corp., Roseland, N. J.
International Pump & Machine Works, 11–13 Governor St., Newark 2, N. J.
Johnson Service Co., 507 E. Michigan St., Milwaukee 2, Wis.
Kahn & Co., Inc., 541 Windsor St., Hartford, Conn.
Kybernetes Co., 1100 Raymond Blvd., Newark, N. J.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave. S., Minneapolis, Minn.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Back Cover
Moeller Instrument Co., 132nd St. at 89th Ave., Richmond Hill 18, N. Y.

National Research Corp., 160 Charlemont St., Newton Highlands, Mass.
Process & Instruments, 15 Stone Ave., Brooklyn 33, N. Y.
Research Electronics Laboratory, Roslyn, Pa.
SCIENTIFIC SPECIALTIES CORP., Snow & Union Sts., Brighton 35, Mass. ADV. PG. 138
Swartwout Co., 18547 Euclid Ave., Cleveland, Ohio
Taylor Instrument Companies, 95 Ames St., Rochester, N. Y.
U. S. Gauge Div., American Machine and Metals, Inc., Sellersville, Pa.
Vacuum Electronic Engineering Co., 86 Denton Ave., New Hyde Park, N. Y.
Vacuum Tube Products, 506 S. Cleveland St., Oceanside, Calif.
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio ADV. PG. 107
Wallace & Tiernan Inc., Belleville 9, N. J.
Weksler Thermometer Corp., Martinique Bldg., 49 W. 32nd St., New York 1, N. Y.
WELCH SCIENTIFIC CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148

INDUCTANCES—Choke

Aerocoil, Inc., 24 Cliff St., Jersey City, N. J.
Airpax Products Co., Middle River, Baltimore 20, Md.
Barker & Williamson, 235 Fairfield Ave., Upper Darby, Pa.
C.G.S. Laboratories, Inc., 391 Ludlow St., Stamford, Conn.
Cambridge Thermionic Corp., 445 Concord Ave., Cambridge 38, Mass.
D & R Ltd., 402 E. Gutierrez St., Santa Barbara, Calif.
DeWitt Development Co., 3008 W. 127th St., Blue Island, Ill.
Dietz Design & Mfg. Co., Grandview 6, Mo.
Electronic Components, Inc., 55 E. 11th St., Paterson, N. J.
Freed Transformer Co., Inc., 1736 Weirfield St., Brooklyn 27, N. Y.
Grand Transformers, Inc., Grand Haven, Mich.
Highland Engineering Co., Main St. & Urban Ave., Westbury, N. Y.
Industrial Transformer Corp., Gouldsboro, Pa.
Johnson Co., E. F., Waseca, Minn.
K-V Transformer Co., 20 E. Franklin St., Danbury, Conn.
Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.
New York Transformer Co., Inc., Third Ave., Alpha, N. J.
North Hills Electric Co., Inc., 203–18 35th Ave., Bayside 61, N. Y.
Polyphase Instrument Co., 705 Haverford Rd., Bryn Mawr, Pa.
RADIO CORPORATION OF AMERICA, TUBE DIV., Harrison, N. J. ADV. PG. 19
Raytheon Mfg. Co., Equipment Operations, Waltham 54, Mass.
Redman Electronics Corp., P. O. Box 72, Thompsonville, Conn.
Sangamo Electric Co., Springfield, Ill.
Sola Electric Co., 4633 W. 16th St., Chicago 50, Ill.
Sterling Transformer Corp., 297 N. Seventh St., Brooklyn 11, N. Y.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Thordarson-Meissner Mfg. Divs., Mt. Carmel, Ill.
Toroceil Co., 1374 Mobile Court, St. Louis, Mo.
Torwico Electronics, Inc., 975 Frelinghuysen Ave., Newark 5, N. J.
Transformers, Inc., 532 North St., Endicott, N. Y.
Tresco, 3824 Terrace St., Philadelphia 28, Pa.
United Transformer Co., 150 Varick St., New York 13, N. Y.
Vari-L Co., Inc., P. O. Box 1433 Stamford, Conn.
Wheeler Insulated Wire Co., Inc., 150 E. Aurora St., Waterbury 91, Conn.
Wirt Co., 5221 Greene St., Philadelphia 44, Pa.

INSTRUMENT PARTS—Precision

Ahrendt Instrument Co., 4910 Calvert Rd., College Park, Md.
Arma Corp., Old Country Rd., Garden City, N. Y.
Barnes Development Co., 213 W. Baltimore Pike, Lansdowne, Pa.
Bogart Mfg. Corp., 315 Siegel St., Brooklyn 6, N. Y.
Borg Corp., George W., Borg Equipment Div., Janesville, Wis
Bristol Co., Waterbury 20, Conn.
Brookfield Engineering Labs., Inc., Porter St., Stoughton, Mass.
Centralab Div. of Globe-Union, Inc., 900 E. Keefe Ave., Milwaukee 1, Wis.
Computing Devices of Canada, Ltd., P. O. Box 508, Ottawa 4, Ontario, Canada
Daven Co., The, 191 Central Ave., Newark 4, N. J.
Doelcam Corp., 1400 Soldiers Field Rd., Boston 35, Mass.
Edmund Scientific Co., 502 E. Gloucester Pike, Barrington, N. J.
Electro-Physics Co., 287-L Broadway, New York 7, N. Y.
Electronic Components, Inc., 55 E. 11th St., Paterson, N. J.
Empire State Labortories, Inc., 2608 Merrick Rd., Bellmore, N. Y.
Farrand Optical Co., Inc., Bronx Blvd. at E. 238th St., New York 70, N. Y.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa
FORD INSTRUMENT CO., DIV. OF SPERRY CORP., 31–10 Thomson Ave., Long Island City, N. Y. ADV. PG. 105
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Gaertner Scientific Corp., 1237 Wrightwood Ave., Chicago, Ill.
GENERAL MILLS, INC., MECHANICAL DIV., 1620 Central Ave., N. E., Minneapolis, Minn. ADV. PG. 101
Graflex, Inc., 154 Clarissa St., Rochester 8, N. Y.
Graphite Metallizing Corp., 1043 Nepperhan Ave., Yonkers, N. Y.
Henry & Miller Industries, 45 Rockefeller Plaza, New York 20, N. Y.
Hill & Co., E. Vernon, P. O. Box 189, Lake Geneva, Wis.
Hycon Mfg. Co., 2961 E. Colorado St., Pasadena 8, Calif.
I-T-E Circuit Breaker Co., 19th & Hamilton Sts., Philadelphia 30, Pa.
Infra Electronic Corp., Roseland, N. J.
Instrument Development Labs., Inc., 163 Highland Ave., Needham Heights, Mass.
Jarrell-Ash Co., 26 Farwell St., Newtonville, Mass.
K-V Transformer Co., 20 E. Franklin St., Danbury, Conn.
Ketay Instrument Corp., 555 Broadway, New York 12, N. Y.
Keystone Electronics Corp., 423 Broome St., New York 13, N. Y.
Keystone Products Co., 904–6 23rd St., Union City, N. J.
KOLLMORGEN OPTICAL CORP., 347 King St., Northampton, Mass. ADV. PG. 120
Landsverk Electrometer Co., 550–552 W. Garfield Ave., Glendale 4, Calif.
Larson Instrument Co., 24 Orchard St., Tarrytown, N. Y.
Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.
Maxson Corp., W. L., 460 W. 34th St., New York 1, N. Y.
New London Instrument Co., P. O. Box 189, New London, Conn.
Phaostron Co., 151 Pasadena Ave., South Pasadena, Calif.
Research Development Manufacture, 429 E. Callom St., Philadelphia 44, Pa.
Sanders Associates, Inc., Nashua, N. H.
Sangamo Electric Co., Springfield, Ill.
SCIENTIFIC SPECIALTIES CORP., Snow & Union Sts., Brighton 35, Mass. ADV. PG. 138
Sensitive Research Instrument Corp., 9 Elm Ave., Mt. Vernon, N. Y.
Servomechanisms, Inc., 500 Franklin Ave., Garden City, N. Y.
Special Instruments Laboratory, Inc., 1003 Highland Ave., Knoxville, Tenn.
Taller & Cooper Inc., 75 Front St., Brooklyn, N. Y.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Tinsley Laboratories, Inc., 2526 Grove St., Berkeley 4, Calif.
U. M. & F. Mfg. Corp., 10929 Vanowen St., North Hollywood, Calif.
Vectron, Inc., 400 Main St., Waltham, Mass.
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 107
WELCH SCIENTIFIC CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148
Winslow Co., Inc., 9 Liberty St., Newark, N. J.

INSULATORS—Ceramic

Advanced Vacuum Products, Inc., 22 Liberty St., Stamford, Conn.
American Lava Corp., Chattanooga 5, Tenn.
Cambridge Thermionic Corp., 445 Concord Ave., Cambridge 38, Mass.
Centralab Division of Globe-Union, Inc., 900 E. Keefe Ave., Milwaukee 1, Wis.
Crowley & Co., Inc., Henry L., West Orange, N. J.
Du-Co Ceramics Co., Box 587, Butler 8, Pa.
Electronic Mechanics, Inc., 101 Clifton Blvd., Clifton, N. J.
Engelhard, Inc., Charles, 850 Passaic St., East Newark, N. J.
FRENCHTOWN PORCELAIN CO., Trenton 9, N. J. ADV. PG. 18
General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.
General Ceramics & Steatite Corp., 250 Crows Mill Rd., Keasbey, N. J.
Insulated Circuits, Inc., 115 Roosevelt Ave., Belleville, N. J.
Isolantite Mfg. Corp., Stirling, N. J.
Johnson Co., E. F., Waseca, Minn.
Kirchberger & Co., Inc., M., 82–92 W. Forest Ave., Englewood, N. J.
Landsverk Electrometer Co., 550–552 W. Garfield Ave., Glendale, Calif.
Lapp Insulator Co., Inc., 31 Gilbert St., LeRoy, N. Y.
Locke Dept., General Electric Co., P. O. Box 57, Baltimore 3, Md.
Louthan Mfg. Co., East Liverpool, Ohio
Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.
Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.
Mycalex Corp. of America, Clifton Blvd., Clifton, N. J.
Porcelain Products, Inc., 422 W. Sandusky St., Findlay, Ohio
Saxonburg Ceramics, Saxonburg, Pa.
Sealtron Corp., Reading Rd. at Amity, Cincinnati 15, Ohio
Star Porcelain Co., 61 Muirhead Ave., Trenton 9, N. J.
Steward Mfg. Co., D. M., E. 36th St., Chattanooga 1, Tenn.
Stupakoff Ceramic & Mfg. Co., Latrobe, Pa.
Syncor Products Co., Malden, Mass.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Thor Ceramics, Inc., 225 Belleville Ave., Bloomfield, N. J.
Western Gold & Platinum Works, 589 Bryant St., San Francisco, Calif.
Wheaton Co., T. C., Millville, N. J.
Wisconsin Porcelain Co., Sun Prairie, Wis.

INSULATORS—Electrical

Armstrong Cork Co., 1010 Concord St., Lancaster, Pa.
Asheville-Schoonmaker Co., Inc., 900 Jefferson Ave., Newport News, Va.
Continental-Diamond Fibre Co., Newark, Delaware
Du-Co Ceramics Co., Box 587, Butler 8, Pa.
Garde Mfg. Co., 588 Eddy St., Providence 3, R. I.
General Electric Co., Chemical Div., 1 Plastics Ave., Pittsfield, Mass.
Irvington Varnish & Insulator Div. of Minnesota Mining & Mfg. Co., 10 Argyle Terrace, Irvington, N. J.
Isolantite Mfg. Corp., Stirling, N. J.
Johns-Manville, 22 E. 40th St., New York 16, N. Y.
Keystone Electronics Corp., 423 Broome St., New York 13, N. Y.
Kirchberger & Co., Inc., M., 82–92 W. Forrest Ave., Englewood, N. J.
Lapp Insulator Co., Inc., 31 Gilbert St., LeRoy, N. Y.
McCormick-Selph Associates, Box 6, Hollister, Calif.
Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.
Mycalex Corp. of America, Clifton Blvd., Clifton, N. J.
Neo Sil Products Div., Rubber Associates, Inc., 850 Metropolitan Ave., Brooklyn 11, N. Y.
Owens-Corning Fiberglas Corp., National Bank Bldg., Toledo, Ohio
Porcelain Products, Inc., 422 W. Sandusky St., Findlay, Ohio
Sealtron Corp., Reading Rd. at Amity, Cincinnati 15, Ohio
Star Porcelain Co., 61 Muirhead Ave., Trenton 9, N. J.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Thor Ceramics, Inc., 225 Belleville Ave., Bloomfield, N. J.
Tri-Point Mfg. & Development Co., 401 Grand St., Brooklyn 11, N. Y.
U. S. GASKET CO., FLUOROCARBON PRODUCTS, INC., DIV., 600 N. 10th St., Camden 1, N. J. ADV. PG. 149
Western Gold & Platinum Works, 589 Bryant St., San Francisco, Calif.

INSULATORS—Fused Quartz

Amersil Co., Inc., 683 Ramsey Ave., Hillside, N. J.
Andersen Laboratories, Inc., 39 Talcott Rd., West Hartford 10, Conn.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 106
Engelhard, Inc., Charles, 850 Passaic St., East Newark, N. J.
Fish-Schurman Corp., 70 Portman Rd., New Rochelle, N. Y.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
Scientific Electronic Labs., Inc., 866 Bergen St., Newark 8, N. J.
Syncor Products Co., Malden, Mass.
Thermal American Fused Quartz Co., Inc., 18–20 Salem St., Dover, N. J.

INSULATORS—Heat

Du-Co Ceramics Co., Box 587, Butler 8, Pa.
Eagle-Picher Co., Cincinnati, Ohio
Isolantite Mfg. Corp., Stirling, N. J.
Mycalex Corp. of America, Clifton Blvd., Clifton, N. J.
Owens-Corning Fiberglas Corp., National Bank Bldg., Toledo, Ohio
Richards Co., Inc., Arklay S., 12 Winchester St., Newton Highlands 61, Mass.
Thor Ceramics, Inc., 225 Belleville Ave., Bloomfield, N. J.

INSULATORS—Plastic

Alden Products Co., 112 N. Main St., Brockton 64, Mass.

Biggs Co., Carl H., 2255 Barry Ave., West Los Angeles, Calif.
Bud Radio, Inc., 2118 E. 55th St., Cleveland 3, Ohio
Cambridge Thermionic Corp., 445 Concord Ave., Cambridge, Mass.
Continental-Diamond Fibre Co., Newark, Delaware
Eastern Precision Resistor Corp., 130–11 90th Ave., Richmond Hill, N. Y.
Electro Chemical Supply & Engineering Co., 750 Broad St., Emmaus, Pa.
Electronic Components, Inc., 55 E. 11th St., Paterson, N. J.
Electronic Mechanics, Inc., 101 Clifton Blvd., Clifton, N. J.
Garde Mfg. Co., 588 Eddy St., Providence 3, R. I.
General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.
General Electric Co., Chemical Div., 1 Plastics Ave., Pittsfield, Mass.
Insulated Circuits, Inc., 115 Roosevelt Ave., Belleville, N. J.
Irvington Varnish & Insulator Div. of Minnesota Mining & Mfg. Co., 10 Argyle Terrace, Irvington, N. J.
Isolantite Mfg. Corp., Stirling, N. J.
Keystone Electronics Corp., 423 Broome St., New York 13, N. Y.
Maxwell Rubber Products Corp., Industrial St., W., Clifton, N. J.
Mycalex Corp. of America, Clifton Blvd., Clifton, N. J.
National Vulcanized Fibre Co., Wilmington 99, Del.
Polymer Corp. of Pennsylvania, Reading, Pa.
Porcelain Products, Inc., 422 W. Sandusky St., Findlay, Ohio
Rex Corp., The, Hayward Rd., West Acton, Mass.
Spaulding Fibre Co., Inc., 310 Wheeler St., Tonawanda, N. Y.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Tri-Point Mfg. & Development Co., 401 Grand St., Brooklyn 11, N. Y.
U. S. GASKET CO., FLUOROCARBON PRODUCTS, INC., DIV., 600 N. 10th St., Camden 1, N. J. ADV. PG. 149
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.

IONIZATION CHAMBERS

See CHAMBERS—Ionization

ION GAUGE TUBES

See INDICATORS—Vacuum

ISOTOPE-LABELED COMPOUNDS

Abbott Laboratories, North Chicago, Ill.
ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 150
ATOMIC RESEARCH LABORATORY, 2633 Santa Monica Blvd., Santa Monica, Calif. ADV. PG. 142
Atomlab, Inc., 489 Fifth Ave., New York 17, N. Y.
Bio-Rad Laboratories, 800 Delaware St., Berkeley, Calif.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Isotope Specialties Co., 3816 San Fernando Rd., Glendale, Calif.
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
NUCLEAR INSTRUMENT & CHEMICAL CORP., 229 W. Erie St., Chicago 10, Ill. ADV. PG. 137
Nuclear Research Corp., Southampton, Pa.
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
Radioactive Products, Inc., 540 W. Congress St., Detroit 26, Mich.
Technical Operations, Inc., 6 Schouler Court, Arlington 74, Mass.
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23

ISOTOPE REFERENCE SYSTEMS

Abbott Laboratories, North Chicago, Ill.
ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 150
Isotope Specialties Co., 3816 San Fernando Rd., Glendale, Calif.
NUCLEAR INSTRUMENT & CHEMICAL CORP., 229 W. Erie St., Chicago 10, Ill. ADV. PG. 137
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23

ISOTOPES—Radioactive

Abbott Laboratories, North Chicago, Ill.
ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 150
Atomic Energy of Canada, Ltd., Commercial Products Div., P. O. Box 93, Ottawa, Ontario, Canada
ATOMIC RESEARCH LABORATORY, 2633 Santa Monica Blvd., Santa Monica, Calif. ADV. PG. 142
Bio-Rad Laboratories, 800 Delaware St., Berkeley, Calif.
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
Falk & Co., Ltd., M., 5 Victoria St., London, S. W. 1, England
Fleischman, Burd & Co., Inc., 22 W. 48th St., New York 36, N. Y.
Isotope Products, Ltd., Davis Rd., Oakville, Ontario, Canada
Isotope Specialties Co., 3816 San Fernando Rd., Glendale, Calif.
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
NUCLEAR INSTRUMENT & CHEMICAL CORP., 229 W. Erie St., Chicago 10, Ill. ADV. PG. 137
Nuclear Research Corp., Southampton, Pa.
Picker X-Ray Corp., 25 S. Broadway, White Plains, N. Y.
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
Radioactive Products, Inc., 540 W. Congress St., Detroit 26, Mich.
Radium Chemical Co., 161 E. 42nd St., New York 17, N. Y.
Technical Operations, Inc., 6 Schouler Court, Arlington 74, Mass.
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
U. S. Radium Corp., 535 Pearl St., New York 7, N. Y.
Western Radiation Lab., 1107 W. 24th St., Los Angeles 7, Calif.

ISOTOPES—Stable

Abbott Laboratories, North Chicago, Ill.
ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 150
ATOMIC RESEARCH LABORATORY, 2633 Santa Monica Blvd., Santa Monica, Calif. ADV. PG. 142
Bio-Rad Laboratories, 800 Delaware St., Berkeley, Calif.
Distillation Products Industries, A Div. of Eastman Kodak Co., Rochester 3, N. Y.
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
Technical Operations, Inc., 6 Schouler Court, Arlington 74, Mass.
TRACERLAB INC., 130 High St., Boston 10, Mass. ADV. PG. 23

LAMPS—Mercury Discharge

Cooper-Hewitt Electric Co., 721 Grand St., Hoboken, N. J.
Dallons Laboratories, Inc., 5066 Santa Monica Blvd., Los Angeles, Calif.
Ferner Co., R. Y., 110 Pleasant St., Malden, Mass.
Gates & Co., Inc., George W., Hempstead Turnpike & Lucille Ave., Franklin Square, N. Y.
General Electric Co., Lamp Division, Nela Park, Cleveland 12, Ohio
Hanovia Chemical & Mfg. Co., 233 N. J. R. R. Ave., Newark 5, N. J.
Jarrell-Ash Co., 26 Farwell St., Newtonville, Mass.
Menlo Research Laboratory, Menlo Park, Calif.
Precise Measurements Co., 942 Kings Highway, Brooklyn 23, N. Y.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
Scientific Electronic Labs., Inc., 866 Bergen St., Newark 8, N. J.
Wakefield Industries, Inc., 5108 Grove St., Skokie, Ill.

LAMPS—Microscope

American Optical Co., Instrument Div., Buffalo 15, N. Y.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Ferner Co., R. Y., 110 Pleasant St., Malden, Mass.
Fish-Schurman Corp., 70 Portman Rd., New Rochelle, N. Y.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Gaertner Scientific Corp., 1237 Wrightwood Ave., Chicago, Ill.
General Electric Co., Lamp Division, Nela Park, Cleveland 12, Ohio
Jarrell-Ash Co., 26 Farwell St., Newtonville, Mass.
Sobotka Co., Eric, 104 W. 42nd St., New York, N. Y.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

LAMPS—Neon Glow

Alden Products Co., 112 N. Main St., Brockton 64, Mass.
British Electronic Sales Co., 23–03 45th Rd., Long Island City 1, N. Y.
Chatham Electronics Corp., Livingston, N. J.
Ferranti Electric, Inc., 30 Rockefeller Plaza, New York 20, N. Y.
General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.
General Electric Co., Lamp Division, Nela Park, Cleveland 12, Ohio
Jarrell-Ash Co., 26 Farwell St., Newtonville, Mass.
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 107

LAMPS—Sodium Arc

Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Gaertner Scientific Corp., 1237 Wrightwood Ave., Chicago, Ill.
Gates & Co., Inc., George W., Hempstead Turnpike & Lucille Ave., Franklin Square, N. Y.
Hanovia Chemical & Mfg. Corp., 233 N. J. R. R. Ave., Newark 5, N. J.
Jarrell-Ash Co., 26 Farwell St., Newtonville, Mass.
Sobotka Co., Eric, 104 W. 42nd St., New York, N. Y.

LAMPS—Ultraviolet

Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Cooper-Hewitt Electric Co., 721 Grand St., Hoboken, N. J.
Dallons Laboratories, Inc., 5066 Santa Monica Blvd., Los Angeles, Calif.
Fish-Schurman Corp., 70 Portman Rd., New Rochelle, N. Y.
Gaertner Scientific Corp., 1237 Wrightwood Ave., Chicago, Ill.
Gates & Co., Inc., George W., Hempstead Turnpike & Lucille Ave., Franklin Square, N. Y.
General Electric Co., Lamp Division, Nela Park, Cleveland 12, Ohio
Goldak Co., 1544 W. Glenoaks Blvd., Glendale 1, Calif.
Hanovia Chemical & Mfg. Co., 233 N. J. R. R. Ave., Newark 5, N. J.
Jarrell-Ash Co., 26 Farwell St., Newtonville, Mass.
Macbeth Corp., P. O. Box 950, Newburgh, N. Y.
Menlo Research Laboratory, Menlo Park, Calif.
Precise Measurements Co., 942 Kings Highway, Brooklyn 23, N. Y.
Scientific Electronic Labs., Inc., 866 Bergen St., Newark 8, N. J.
Sobotka Co., Eric, 104 W. 42nd St., New York, N. Y.
Sylvania Electric Products, Inc., 1740 Broadway, New York 19, N. Y.
Thermal American Fused Quartz Co., Inc., 18–20 Salem St., Dover, N. J.
Wakefield Industries, Inc., 5108 Grove St., Skokie, Ill.

LEAK TESTERS

See DETECTORS—Leak

LIGHTS—Monochromatic

Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Ferner Co., R. Y., 110 Pleasant St., Malden, Mass.
Ferranti Electric, Inc., 30 Rockefeller Plaza, New York 20, N. Y.
Gaertner Scientific Corp., 1237 Wrightwood Ave., Chicago, Ill.
Gates & Co., Inc., George W., Hempstead Turnpike & Lucille Ave., Franklin Square, N. Y.
Hanovia Chemical & Mfg. Co., 233 N. J. R. R. Ave., Newark 5, N. J.
Industrial Controls, Inc., 525 N. Noble St., Chicago 22, Ill.
Jarrell-Ash Co., 26 Farwell St., Newtonville, Mass.
Precise Measurements Co., 942 Kings Highway, Brooklyn 23, N. Y.
Sobotka Co., Eric, 104 W. 42nd St., New York, N. Y.

LIQUEFIERS—Helium

Jarrell-Ash Co., 26 Farwell St., Newtonville, Mass.
Little, Inc., Arthur D., Acorn Lane, Cambridge 42, Mass.

MACHINES—Blueprint & Whiteprint

Peck & Harvey Mfg. Corp., 5643 N. Western Ave., Chicago 45, Ill.

MACHINES—Engraving

Auto Engraver Co., Ridgefield, Conn.
Green Instrument Co., 382 Putnam Ave., Cambridge, Mass.
Mico Instrument Co., 82 S. Trowbridge Ave., Cambridge 38, Mass.
New Hermes Engraving Machine Corp., 13–19 University Place, New York 3, N. Y.

MACHINES—Glass Working

Associated Engineering & Mfg. Corp., Glen Ridge, N. J.
Bethlehem Apparatus Co., Inc., Front & Depot Sts., Hellertown, Pa.
Eisler Engineering Co., Inc., 760 S. 13th St., Newark 3, N. J.
Forter-Telchmann Co., Clark Bldg., Pittsburgh, Pa.
Kahle Engineering Co., 1307 Seventh St., North Bergen, N. J.

Raytheon Mfg. Co., Equipment Operations, Waltham 54, Mass.
Sommer & Maca Glass Machine Co., 3600 S. Oakley Ave., Chicago 9, Ill.

MAGNETS

Arnold Engineering Co., Marengo, Ill.
Caltron Co., 1406 S. Hobart Blvd., Los Angeles 6, Calif.
Carboloy Department of General Electric Co., 11139 East Eight Mile Blvd., Detroit 32, Mich.
Crucible Steel Co. of America, Henry W. Oliver Bldg., P. O. Box 88, Pittsburgh 30, Pa.
Crowley & Co., Inc., Henry L., West Orange, N. J.
Daylite Vacuum Products Co., 5207 N. Milwaukee Ave., Chicago 30, Ill.
HIGH VOLTAGE ENGINEERING CORP., 7 University Rd., Cambridge 38, Mass. ADV. PG. 15
Indiana Steel Products Co., 700 Valparaiso St., Valparaiso, Ind.
Jobbins Electronic Enterprises, Menlo Park, Calif.
Kellogg Switchboard & Supply Co., 79 W. Monroe, Chicago 3, Ill.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 131
Little, Inc., Arthur D., Acorn Lane, Cambridge 42, Mass.
Permag Corp., 214 Taaffe Place, Brooklyn 5, N. Y.
Process & Instruments, 15 Stone Ave., Brooklyn 33, N. Y.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
Sensitive Research Instrument Corp., 9 Elm Ave., Mt. Vernon, N. Y.
Stackpole Carbon Co., St. Marys, Pa.
Varian Associates, 611 Hansen Way, Palo Alto, Calif.

MANIPULATORS—Remote Control

Alderson Research Laboratories, Inc., 10 E. 38th St., New York 16, N. Y.
American Machine & Foundry Co., Atomic Energy Dept., 261 Madison Ave., New York 16, N. Y.
Atomic Energy of Canada, Ltd., Commercial Products Div., P. O. Box 93, Ottawa, Ontario, Canada
BLICKMAN, INC., S., 7900 Gregory Ave., Weehawken, N. J. ADV. PG. 32
CENTRAL RESEARCH LABORATORIES, INC., Red Wing, Minn. ADV. PG. 12, 13
Elm Laboratories, 18 South Broadway, Dobbs Ferry, N. Y.
Faik & Co., Ltd., M., 5 Victoria St., London, S. W. 1, England
FARREL-BIRMINGHAM CO., INC., Ansonia, Conn. ADV. PG. 111
FORD INSTRUMENT CO., DIV. OF SPERRY CORP., 31–10 Thomson Ave., Long Island City, N. Y. ADV. PG. 105
GENERAL ELECTRIC CO., ATOMIC POWER EQUIPMENT COMPONENT, 2900 Campbell Ave., Schenectady 6, N. Y. ADV. PG. 2–6
GENERAL MILLS, INC., MECHANICAL DIV., 1620 Central Ave., N. E., Minneapolis, Minn. ADV. PG. 101
Greer Hydraulics, Inc., International Airport, Jamaica 30, N. Y.
Industrial Science, 63–15 Forest Ave., Ridgewood 27, N. Y.
Kahn & Co., Inc., 541 Windsor St., Hartford, Conn.
Kewaunee Mfg. Co., 5083 S. Center St., Adrian, Mich.
LERMAC, INC., 5303 Adeline St., Oakland, Calif. ADV. PG. 114
Pantatron Ltd., Teleflex Works, High Rd., Chadwell Heath, Essex, England
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23

MANOMETERS

Ace Glass, Inc., Vineland, N. J.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Clark Instruments, Div. of National Electrical Machine Shops, Inc., 919 Jesup-Blair Drive, Silver Spring, Md.
CONSOLIDATED ENGINEERING CORP., 300 N. Sierra Madre Villa, Pasadena 15, Calif. ADV. PG. Inside Front Cover
Consolidated Siphon Supply Co., 24 Wooster St., New York, N. Y.
Dallons Laboratories, Inc., 5066 Santa Monica Blvd., Los Angeles, Calif.
Daylite Vacuum Products Co., 5207 N. Milwaukee Ave., Chicago 30, Ill.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Hastings Instrument Co., Superhighway at Pine Ave., Hampton, Va.
Hilt & Co., E. Vernon, P. O. Box 189, Lake Geneva, Wis.
Infilco, Inc., P. O. Box 5033, Tucson, Ariz.
Moeller Instrument Co., 132nd St. at 89th Ave., Richmond Hill 18, N. Y.
Sargent & Co., E. R., 4647 W. Foster Ave., Chicago 30, Ill.
Scientific Glass Apparatus Co., Inc., 100 Lakewood Terrace, Bloomfield, N. J.
Simplex Valve & Meter Co., 68th & Upland Sts., Philadelphia 42, Pa.
Taylor Instrument Companies, 95 Ames St., Rochester, N. Y.
Thermo Instrument Co., P. O. Box 336, 1310 Old County Rd., Belmont, Calif.
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 107
Wallace & Tiernan, Inc., Belleville 9, N. J.
WELCH SCIENTIFIC CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148

MANTLES—Heating

Ace Glass, Inc., Vineland, N. J.
Daylite Vacuum Products Co., 5207 N. Milwaukee Ave., Chicago 30, Ill.
Scientific Glass Apparatus Co., Inc., 100 Lakewood Terrace, Bloomfield, N. J.

MASKS—Dust, Fume, Gas, Smoke, etc.

American Optical Co., 28 Mechanic St., Southbridge, Mass.
Davis Emergency Equipment Co., Inc., 252 Halleck St., Newark, N. J.
De Vilbiss Co., 300 Phillips Ave., Toledo, Ohio
Mine Safety Appliances Co., Braddock, Thomas & Meade Sts., Pittsburgh 8, Pa.

MEGOHMMETERS

Associated Research, Inc., 3788 W. Belmont, Chicago, Ill.
BENDIX AVIATION CORP., CINCINNATI DIV., 203 W. Third St., Cincinnati 2, Ohio. ADV. PG. 14
Biddle Co., James G., 1316 Arch St., Philadelphia 7, Pa.
Brush Electronics Co., 3405 Perkins Ave., Cleveland 14, Ohio
Dice Co., J. W., Englewood 41, N. J.
EKCO ELECTRONICS LTD., EKCO WORKS, Southend-on-Sea, Essex, England. ADV. PG. 127
Electrodyne Co., Endicott St., Norwood, Mass.
Epco Electronics, Inc., 140 Liberty St., New York 6, N. Y.
Feiler Engineering & Mfg. Co., 8026 N. Monticello Ave., Skokie, Ill.
Freed Transformer Co., Inc., 1736 Weirfield St., Brooklyn 27, N. Y.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
Hewlett-Packard Co., 395 Page Mill Rd., Palo Alto, Calif.
Industrial Instruments, Inc., 89 Commerce Rd., Cedar Grove, N. J.
Industrial Test Equipment Co., 55 E. 11th St., New York 3, N. Y.
Kahn & Co., Inc., 541 Windsor St., Hartford, Conn.
Kuljian Corporation, The, 1200 N. Broad St., Philadelphia 21, Pa.
Lee Electronic Labs., Inc., 233 Dudley St., Roxbury 19, Mass.
MacLeod & Hanopol, Inc., 10 Roland St., Charlestown 29, Mass.
National Pneumatic Co., Inc. & Holtzer-Cabot Divisions, 125 Amory St., Boston 19, Mass.
Peschel Electronics, Inc., 13 Garden St., New Rochelle, N. Y.
Phaostron Co., 151 Pasadena Ave., South Pasadena, Calif.
Precise Measurements Co., 942 Kings Highway, Brooklyn 23, N. Y.
Precision Apparatus Co., Inc., 92–27 Horace Harding Blvd., Elmhurst, N. Y.
Radio City Products Co., Inc., Centre & Glendale Sts., Easton, Pa.
Sensitive Research Instrument Corp., 9 Elm Ave., Mt. Vernon, N. Y.
Shallcross Mfg. Co., 10 Jackson Ave., Collingdale, Pa.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Sticht Co., Inc., Herman H., 27 Park Place, New York 7, N. Y.
Supreme, Inc., Box MH552, Greenwood, Miss.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Triplett Electrical Instrument Co., 286 Harmon Rd., Bluffton, Ohio
Weston Electrical Instrument Corp., 614 Frelinghuysen Ave., Newark 5, N. J.
Winslow Co., Inc., 9 Liberty St., Newark, N. J.

METALLOSCOPES

Bausch & Lomb Optical Co., 630 St. Paul St., Rochester 2, N. Y.
Ferner Co., R. Y., 110 Pleasant St., Malden, Mass.
Goldak Co., 1544 W. Glenoaks Blvd., Glendale 1, Calif.
Jarrell-Ash Co., 26 Farwell St., Newtonville, Mass.
Sabatka Co., Eric, 104 W. 42nd St., New York, N. Y.

METALS

Alnico

Arnold Engineering Co., Marengo, Ill.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Carboloy Department of General Electric Co., 11139 East Eight Mile Blvd., Detroit 32, Mich.
Crucible Steel Co. of America, Henry W. Oliver Bldg., P. O. Box 88, Pittsburgh 30, Pa.
Permag Corp., 214 Taaffe Place, Brooklyn 5, N. Y.
Pyro-Metals, Inc., Hudson, Mass.

Aluminum

Alpha Metals, Inc., P. O. Box 34, 56 Water St., Jersey City 4, N. J.
Aluminum Co. of America, Alcoa Bldg., Pittsburgh 19, Pa.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Federated Metals Div., American Smelting & Refining Co., 120 Broadway, New York 5, N. Y.
Hommel Co., O., 209–213 Fourth Ave., Pittsburgh, Pa.
Pyro-Metals, Inc., Hudson, Mass.
Reynolds Metals Co., 2500 S. Third St., Louisville 1, Ky.

Antimony

Anchor Metal Co., 244 Boerum St., Brooklyn 6, N. Y.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Division Lead Co., 7742 W 61st Place, Summit, Ill.
Federated Metals Div., American Smelting & Refining Co., 120 Broadway, New York 5, N. Y.
NATIONAL LEAD CO., 111 Broadway, New York 6, N. Y. ADV. PG. 27
Pantatron Ltd., Metals Div., Market Bldgs., 29 Mincing Lane, London, E. C. 3, England
Pyro-Metals, Inc., Hudson, Mass.

Arsenic

Anchor Metal Co., 244 Boerum St., Brooklyn 6, N. Y.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Division Lead Co., 7742 W. 61st Place, Summit, Ill.
Pantatron Ltd., Metals Div., Market Bldgs., 29 Mincing Lane, London, E. C. 3, England
Pyro-Metals, Inc., Hudson, Mass.

Barium

AMERAY CORP., Route #46, Kenvil, N. J. ADV. PG. 123
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Pantatron Ltd., Metals Div., Market Bldgs., 29 Mincing Lane, London, E. C. 3, England
Pyro-Metals, Inc., Hudson, Mass.

Barytes

NATIONAL LEAD CO., 111 Broadway, New York 6, N. Y. ADV. PG. 27

Beryllium and Beryllium Alloys

American Silver Co., 36–07 Prince St., Flushing, N. Y.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Beryllium Corp., Reading, Pa.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Brush Beryllium Co., 4301 Perkins Ave., Cleveland 3, Ohio
Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.
Metallo Chemical Corp., 117 Liberty St., New York 6, N. Y.
Metals & Controls Corp., General Plate Div., Spencer Thermostat Div., Attleboro, Mass.
Pyro-Metals, Inc., Hudson, Mass.
Vacuum Metals Corp., 70 Memorial Drive, Cambridge 42, Mass.

Bismuth

Alpha Metals Inc., P. O. Box 34, 56 Water St., Jersey City 4, N. J.
Anchor Metal Co., 244 Boerum St., Brooklyn 6, N. Y.
Baker Chemical Co., J. T., Phillipsburg, N. J.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Cerro de Pasco Corp., 40 Wall St., New York 5, N. Y.
Division Lead Co., 7742 W. 61st Place, Summit, Ill.

Federated Metals Div., American Smelting & Refining Co., 120 Broadway, New York 5, N. Y.
Pantatron Ltd., Metals Div., Market Bldgs., 29 Mincing Lane, London, E. C. 3, England
Pyro-Metals, Inc., Hudson, Mass.

Brass and Bronze

American Brass Co., Waterbury 20, Conn.
American Silver Co., 36-07 Prince St., Flushing, N. Y.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Chase Brass & Copper Co., Inc., 236 Grand St., Waterbury 20, Conn.
Federated Metals Div., American Smelting & Refining Co., 120 Broadway, New York 5, N. Y.
Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.
Metals & Controls Corp., General Plate Div., Spencer Thermostat Div., Attleboro, Mass.
Pantatron Ltd., Metals Div., Market Bldgs., 29 Mincing Lane, London, E. C. 3, England
Phelps Dodge Copper Products Corp., 40 Wall St., New York 5, N. Y.
Pyro-Metals, Inc., Hudson, Mass.

Cadmium

Anchor Metal Co., 244 Boerum St., Brooklyn 6, N. Y.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Division Lead Co., 7742 W. 61st Place, Summit, Ill.
Federated Metals Div., American Smelting & Refining Co., 120 Broadway, New York 5, N. Y.
Hommel Co., O., 209-213 Fourth Ave., Pittsburgh, Pa.
Pantatron Ltd., Metals Div., Market Bldgs., 29 Mincing Lane, London, E. C. 3, England
Pyro-Metals, Inc., Hudson, Mass.

Calcium

Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Eagle-Picher Co., Cincinnati, Ohio
Electro Metallurgical Co., A Div. of Union Carbide & Carbon Corp., 30 E. 42nd St., New York 17, N. Y.
Pyro-Metals, Inc., Hudson, Mass.

Cerium

Atomic Power & Chemicals Corp., 201 Main St., White Plains, N. Y.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Metallo Chemical Corp., 117 Liberty St., New York 6, N. Y.

Chromium

Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Electro Metallurgical Co., Div. of Union Carbide & Carbon Corp., 30 E. 42nd St., New York 17, N. Y.
Pantatron Ltd., Metals Div., Market Bldgs., 29 Mincing Lane, London, E. C. 3, England
Pyro-Metals, Inc., Hudson, Mass.
Shieldalloy Corp., Div. of Metallurg, Inc., 99 Park Ave., New York 16, N. Y.
Vacuum Metals Corp., 70 Memorial Drive, Cambridge 42, Mass.
Vitro Corp. of America, 233 Broadway, New York 7, N. Y.

Cobalt

Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Hommel Co., O., 209-213 Fourth Ave., Pittsburgh, Pa.
NATIONAL LEAD CO., 111 Broadway, New York 6, N. Y. ADV. PG. 27
Pyro-Metals, Inc., Hudson, Mass.
Vacuum Metals Corp., 70 Memorial Drive, Cambridge 42, Mass.
Vitro Corp. of America, 233 Broadway, New York 7, N. Y.

Coefficient Metals

Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Carpenter Steel Co., The, Reading, Pa.
Driver-Harris Co., Harrison, N. J.
Metals & Controls Corp., General Plate Div., Spencer Thermostat Div., Attleboro, Mass.
Sylvania Electric Products, Inc., 1740 Broadway, New York 19, N. Y.
Vacuum Metals Corp., 70 Memorial Drive, Cambridge 42, Mass.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.

Columbium

Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Electro Metallurgical Co., Div. of Union Carbide & Carbon Corp., 30 E. 42nd St., New York 17, N. Y.
Fansteel Metallurgical Corp., North Chicago, Ill.
Shieldalloy Corp., Div. of Metallurg, Inc., 99 Park Ave., New York 16, N. Y.
Vitro Corp. of America, 233 Broadway, New York 7, N. Y.

Copper

American Brass Co., Waterbury 20, Conn.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Chase Brass & Copper Co., Inc., 236 Grand St., Waterbury 20, Conn.
Federated Metals Div., American Smelting & Refining Co., 120 Broadway, New York 5, N. Y.
Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.
Pantatron Ltd., Metals Div., Market Bldgs., 29 Mincing Lane, London, E. C. 3, England
Phelps Dodge Copper Products Corp., 40 Wall St., New York 5, N. Y.
Pyro-Metals, Inc., Hudson, Mass.

Europium

Atomic Power & Chemicals Corp., 201 Main St., White Plains, N. Y.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Metallo Chemical Corp., 117 Liberty St., New York 6, N. Y.

Foil

See also **FOILS**

Alpha Metals, Inc., P. O. Box 34, 56 Water St., Jersey City 4, N. J.
Aluminum Co. of America, Alcoa Bldg., Pittsburgh 19, Pa.
Anchor Metal Co., 244 Boerum St., Brooklyn 6, N. Y.
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 10
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bishop & Co., J., Malvern, Pa.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Division Lead Co., 7742 W. 61st Place, Summit, Ill.
Fansteel Metallurgical Corp., North Chicago, Ill.
Metals & Controls Corp., General Plate Div., Spencer Thermostat Div., Attleboro, Mass.
Pantatron Ltd., Metals Div., Market Bldgs., 29 Mincing Lane, London, E. C. 3, England
Reynolds Metals Co., 2500 S. Third St., Louisville 1, Ky.

Gadolinium

Atomic Power & Chemicals Corp., 201 Main St., White Plains, N. Y.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Metallo Chemical Corp., 117 Liberty St., New York 6, N. Y.

Gallium

Aluminum Co. of America, Alcoa Bldg., Pittsburgh 19, Pa.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Eagle-Picher Co., Cincinnati, Ohio
Pantatron Ltd., Metals Div., Market Bldgs., 29 Mincing Lane, London, E. C. 3, England

Germanium

Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Eagle-Picher Co., Cincinnati, Ohio
Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.
Metals & Controls Corp., General Plate Div., Spencer Thermostat Div., Attleboro, Mass.
Sylvania Electric Products, Inc., 1740 Broadway, New York 19, N. Y.

Gold and Gold Alloys

American Silver Co., 36-07 Prince St., Flushing, N. Y.
Baker & Co., Inc., 113 Astor St., Newark 5, N. J.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Handy & Harman, 82 Fulton St., New York 38, N. Y.
Hommel Co., O., 209-213 Fourth Ave., Pittsburgh, Pa.
Makepeace Co., D. E., Attleboro, Mass.
Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.
Metals & Controls Corp., General Plate Div., Spencer Thermostat Div., Attleboro, Mass.
Metz Refining Co., 369 Mulberry St., Newark 2, N. J.
Ney Co., J. M., 71 Elm St., Hartford 1, Conn.
Pantatron Ltd., Metals Div., Market Bldgs., 29 Mincing Lane, London, E. C. 3, England
Western Gold & Platinum Works, 589 Bryant St., San Francisco, Calif.

Hafnium

Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Metals & Controls Corp., General Plate Div., Spencer Thermostat Div., Attleboro, Mass.

High Permeability Alloys

Allegheny Ludlum Steel Corp., 2020 Oliver Bldg., Pittsburgh 22, Pa.
American Silver Co., 36-07 Prince St., Flushing, N. Y.
Arnold Engineering Co., Marengo, Ill.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Carpenter Steel Co., The, Reading, Pa.
Driver-Harris Co., Harrison, N. J.
Electric Steel Foundry Co., 2141 N. W. 25th Ave., Portland 10, Ore.
Pantatron Ltd., Metals Div., Market Bldgs., 29 Mincing Lane, London, E. C. 3, England
Pyro-Metals, Inc., Hudson, Mass.
Vacuum Metals Corp., 70 Memorial Drive, Cambridge 42, Mass.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.

Indium

Alpha Metals, Inc., P. O. Box 34, 56 Water St., Jersey City 4, N. J.
Anchor Metal Co., 244 Boerum St., Brooklyn 6, N. Y.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Cerro de Pasco Corp., 40 Wall St., New York 5, N. Y.
Division Lead Co., 7742 W. 61st Place, Summit, Ill.
Federated Metals Div., American Smelting & Refining Co., 120 Broadway, New York 5, N. Y.
Metals & Controls Corp., General Plate Div., Spencer Thermostat Div., Attleboro, Mass.
Pantatron Ltd., Metals Div., Market Bldgs., 29 Mincing Lane, London, E. C. 3, England
Western Gold & Platinum Works, 589 Bryant St., San Francisco, Calif.

Iridium

American Platinum Works, N. J. R. R. Ave. at Oliver St., Newark, N. J.
Baker & Co., Inc., 113 Astor St., Newark 5, N. J.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Fleischman, Burd & Co., Inc., 22 W. 48th St., New York 36, N. Y.
Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.
Metals & Controls Corp., General Plate Div., Spencer Thermostat Div., Attleboro, Mass.
Western Gold & Platinum Works, 589 Bryant St., San Francisco, Calif.

Iron

Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
FARREL-BIRMINGHAM CO., INC., Ansonia, Conn. ADV. PG. 111
Shieldalloy Corp., Div. of Metallurg, Inc., 99 Park Ave., New York 16, N. Y.
United States Steel Corp., 525 William Penn Place, Pittsburgh 30, Pa.
Vacuum Metals Corp., 70 Memorial Drive, Cambridge 42, Mass.

Laminated Metals

American Silver Co., 36-07 Prince St., Flushing, N. Y.
Baker & Co., Inc., 113 Astor St., Newark 5, N. J.
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 10
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Metals & Controls Corp., General Plate Div., Spencer Thermostat Div., Attleboro, Mass.

Pantatron Ltd., Metals Div., Market Bldgs., 29 Mincing Lane, London, E. C. 3, England

Lanthanum

Atomic Power & Chemicals Corp., 201 Main St., White Plains, N. Y.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Metallo Chemical Corp., 117 Liberty St., New York 6, N. Y.

Lead Clad

Knapp Mills, Inc., 25–15 Borden Ave., Long Island City 1, N. Y.
Reynolds Metals Co., 2500 S. Third St., Louisville 1, Ky.
Southern Lead Burning Co., Atlanta, Ga.
Treadwell Co., Midland, Pa.

Lead and Lead Alloys

Alpha-Metals, Inc., P. O. Box 34, 56 Water St., Jersey City 4, N. J.
AMERAY CORP., Route #46, Kenvil, N. J. ADV. PG. 123
Anchor Metal Co., 244 Boerum St., Brooklyn 6, N. Y.
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 10
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Division Lead Co., 7742 W. 61st Place, Summit, Ill.
Federated Metals Div., American Smelting & Refining Co., 120 Broadway, New York 5, N. Y.
Knapp Mills, Inc., 23–15 Borden Ave., Long Island City, N. Y.
NATIONAL LEAD CO., 111 Broadway, New York 6, N. Y. ADV. PG. 27
Pantatron Ltd., Metals Div., Market Bldgs., 29 Mincing Lane, London, E. C. 3, England
Professional Instrument Corp., 149 Broadway, New York 6, N. Y.
RAY-PROOF CORP., 513 W. 54th St., New York, N. Y. ADV. PG. 22

Liquid

Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.

Lithium

Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Hommel Co., O., 209–213 Fourth Ave., Pittsburgh, Pa.
Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.
Metallo Chemical Corp., 117 Liberty St., New York 6, N. Y.
Pyro-Metals, Inc., Hudson, Mass.

Magnesium

Aluminum Co. of America, Alcoa Bldg., Pittsburgh 19, Pa.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Dow Chemical Co., Midland, Mich.
Federated Metals Div., American Smelting & Refining Co., 120 Broadway, New York 5, N. Y.
Metals & Controls Corp., General Plate Div., Spencer Thermostat Div., Attleboro, Mass.
Pantatron Ltd., Metals Div., Market Bldgs., 29 Mincing Lane, London, E. C. 3, England

Manganese

Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Electro Metallurgical Co., Div. of Union Carbide & Carbon Corp., 30 E. 42nd St., New York 17, N. Y.
Hommel Co., O., 209–213 Fourth Ave., Pittsburgh, Pa.

Mercury

Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bethlehem Apparatus Co., Inc., Front & Depot Sts., Hellertown, Pa.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Daylite Vacuum Products Co., 5207 N. Milwaukee Ave., Chicago 30, Ill.
Fleischman, Burd & Co., Inc., 22 W. 48th St., New York 36, N. Y.
Hill Co., C. R., 35 W. Grand River, Detroit 26, Mich.
Kahl Scientific Instrument Corp., P. O. Box 1166, El Cajon, Calif.
Mallinckrodt Chemical Works, Second & Mallinckrodt Sts., St. Louis 7, Mo.
Pantatron Ltd., Metals Div., Market Bldgs., 29 Mincing Lane, London, E. C. 3, England
Pyro-Metals, Inc., Hudson, Mass.
Western Gold & Platinum Works, 589 Bryant St., San Francisco, Calif.

Molybdenum

Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Cross Co., H., 15 Beekman St., New York 38, N. Y.
Fansteel Metallurgical Corp., North Chicago, Ill.
Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.
Metals & Controls Corp., General Plate Div., Spencer Thermostat Div., Attleboro, Mass.
Pantatron Ltd., Metals Div., Market Bldgs., 29 Mincing Lane, London, E. C. 3, England
Sylvania Electric Products, Inc., 1740 Broadway, New York 19, N. Y.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.

Nickel and Nickel Alloys

Allegheny Ludlum Steel Corp., 2020 Oliver Bldg., Pittsburgh 22, Pa.
Alloy Metal Wire Div., H. K. Porter Co., Inc. of Pittsburgh, 13th & Pennsylvania Ave., Prospect Park, Pa.
American Silver Co., 36–07 Prince St., Flushing, N. Y.
Babcock & Wilcox Co., 161 E. 42nd St., New York 17, N. Y.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Carpenter Steel Co., The, Reading, Pa.
Chase Brass & Copper Co., Inc., 236 Grand St., Waterbury 20, Conn.
Driver-Harris Co., Harrison, N. J.
Electric Steel Foundry Co., 2141 N. W. 25th Ave., Portland 10, Ore.
Haynes Stellite Co., Div. of Union Carbide & Carbon Corp., 725 S. Lindsay St., Kokomo, Ind.
International Nickel Co., Inc., 67 Wall St., New York 5, N. Y.
Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.
Metals & Controls Corp., General Plate Div., Spencer Thermostat Div., Attleboro, Mass.
NATIONAL LEAD CO., 111 Broadway, New York 6, N. Y. ADV. PG. 27
Pantatron Ltd., Metals Div., Market Bldgs., 29 Mincing Lane, London, E. C. 3, England
Pyro-Metals, Inc., Hudson, Mass.
Sylvania Electric Products, Inc., 1740 Broadway, New York 19, N. Y.
Vacuum Metals Corp., 70 Memorial Drive, Cambridge 42, Mass.
Vitro Corp. of America, 233 Broadway, New York 7, N. Y.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.

Nickel Ribbon

Alloy Metal Wire Div., H. K. Porter Co., Inc. of Pittsburgh, 13th & Pennsylvania Ave., Prospect Park, Pa.
American Silver Co., 36–07 Prince St., Flushing, N. Y.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Driver-Harris Co., Harrison, N. J.
Metals & Controls Corp., General Plate Div., Spencer Thermostat Div., Attleboro, Mass.
Pantatron Ltd., Metals Div., Market Bldgs., 29 Mincing Lane, London, E. C. 3, England
Sylvania Electric Products, Inc., 1740 Broadway, New York 19, N. Y.

Niobium

Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Fansteel Metallurgical Corp., North Chicago, Ill.
Shieldalloy Corp., Div. of Metallurg, Inc., 99 Park Ave., New York 16, N. Y.

Palladium

American Platinum Works, N. J. R. R. Ave. at Oliver St., Newark 5, N. J.
American Silver Co., 36–07 Prince St., Flushing, N. Y.
Baker & Co., Inc., 113 Astor St., Newark 5, N. J.
Bishop & Co., J., Malvern, Pa.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Fleischman, Burd & Co., Inc., 22 W. 48th St., New York 36, N. Y.
Makepeace Co., D. E., Attleboro, Mass.
Metals & Controls Corp., General Plate Div., Spencer Thermostat Div., Attleboro, Mass.
Metz Refining Co., 369 Mulberry St., Newark 2, N. J.
Western Gold & Platinum Works, 589 Bryant St., San Francisco, Calif.

Phosphor Bronze

American Brass Co., Waterbury 20, Conn.
American Silver Co., 36–07 Prince St., Flushing, N. Y.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Chase Brass & Copper Co., Inc., 236 Grand St., Waterbury 20, Conn.
Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.
Metals & Controls Corp., General Plate Div., Spencer Thermostat Div., Attleboro, Mass.
Pantatron Ltd., Metals Div., Market Bldgs., 29 Mincing Lane, London, E. C. 3, England

Platinum

American Platinum Works, N. J. R. R. Ave. at Oliver St., Newark 5, N. J.
American Silver Co., 36–07 Prince St., Flushing, N. Y.
Baker & Co., Inc., 113 Astor St., Newark 5, N. J.
Bishop & Co., J., Malvern, Pa.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Engelhard, Inc., Charles, 850 Passiac St., East Newark, N. J.
Fleischman, Burd & Co., Inc., 22 W. 48th St., New York 36, N. Y.
Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.
Metals & Controls Corp., General Plate Div., Spencer Thermostat Div., Attleboro, Mass.
Metz Refining Co., 369 Mulberry St., Newark 2, N. J.
Ney Co., J. M., 71 Elm St., Hartford, Conn.
Western Gold & Platinum Works, 589 Bryant St., San Francisco, Calif.

Plutonium

Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.

Polonium

Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
CANADIAN RADIUM & URANIUM CORP., 630 Fifth Ave., New York 20, N. Y. ADV. PG. 133
U. S. RADIUM CORP., 535 Pearl St., New York 7, N. Y. ADV. PG. 108

Powdered

Arnold Engineering Co., Marengo, Ill.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Division Lead Co., 7742 W. 61st Place, Summit, Ill.
Handy & Harman, 82 Fulton St., New York 38, N. Y.
Hommel Co., O., 209–213 Fourth Ave., Pittsburgh, Pa.
Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.
Metal Hydrides, Inc., 12–24 Congress St., Beverly, Mass.
NATIONAL LEAD CO., 111 Broadway, New York 6, N. Y. ADV. PG. 27
Pantatron Ltd., Metals Div., Market Bldgs., 29 Mincing Lane, London, E. C. 3, England
Pyro-Metals, Inc., Hudson, Mass.
Shieldalloy Corp., Div. of Metallurg, Inc., 99 Park Ave., New York 16, N. Y.
Sylvania Electric Products, Inc., 1740 Broadway, New York 19, N. Y.

Praseodymium

Atomic Power & Chemicals Corp., 201 Main St., White Plains, N. Y.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Metallo Chemical Corp., 117 Liberty St., New York 6, N. Y.

Radium

CANADIUM RADIUM & URANIUM CORP., 630 Fifth Ave., New York 20, N. Y. ADV. PG. 133
Radium Chemical Co., 161 E. 42nd St., New York 17, N. Y.
U. S. RADIUM CORP., 535 Pearl St., New York 7, N. Y. ADV. PG. 108

Rhenium

Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.
Shieldalloy Corp., Div. of Metallurg, Inc., 99 Park Ave., New York 16, N. Y.
Sylvania Electric Products, Inc., 1740 Broadway, New York 19, N. Y.

Samarium

Atomic Power & Chemicals Corp., 201 Main St., White Plains, N. Y.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.

Silicon

Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Electro Metallurgical Co., Div. of Union Carbide & Carbon Corp., 30 E. 42nd St., New York 17, N. Y.
Sylvania Electric Products, Inc., 1740 Broadway, New York 19, N. Y.

Silver

American Platinum Works, N. J. R. R. Ave. at Oliver St., Newark 5, N. J.
American Silver Co., 36-07 Prince St., Flushing, N. Y.
Anchor Metal Co., 244 Boerum St., Brooklyn 6, N. Y.
Baker & Co., Inc., 113 Astor St., Newark 5, N. J.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Handy & Harman, 82 Fulton St., New York 38, N. Y.
Hommel Co., O., 209-213 Fourth Ave., Pittsburgh, Pa.
Makepeace Co., D. E., Attleboro, Mass.
Mallinckrodt Chemical Works, Second & Mallinckrodt Sts., St. Louis 7, Mo.
Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.
Metals & Controls Corp., General Plate Div., Spencer Thermostat Div., Attleboro, Mass.
Metz Refining Co., 369 Mulberry St., Newark 2, N. J.
Ney Co., J. M., 71 Elm St., Hartford 1, Conn.
Western Gold & Platinum Works, 589 Bryant St., San Francisco, Calif.

Silver Alloys and Compounds

American Platinum Works, N. J. R. R. Ave. at Oliver St. Newark 5, N. J.
American Silver Co., 36-07 Prince St., Flushing, N. Y.
Anchor Metal Co., 244 Boerum St., Brooklyn 6, N. Y.
Baker & Co., Inc., 113 Astor St., Newark 5, N. J.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Handy & Harman, 82 Fulton St., New York 38, N. Y.
Hommel Co., O., 209-213 Fourth Ave., Pittsburgh, Pa.
Mallinckrodt Chemical Works, Second & Mallinckrodt Sts., St. Louis 7, Mo.
Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.
Merck & Co., Inc., Rahway, N. J.
Metals & Controls Corp., General Plate Div., Spencer Thermostat Div., Attleboro, Mass.
Metz Refining Co., 369 Mulberry St., Newark 2, N. J.
Ney Co., J. M., 71 Elm St., Hartford, Conn.
Pantatron Ltd., Metal Div., Market Bldgs., 29 Mincing Lane, London, E. C. 3, England
Western Gold & Platinum Works, 589 Bryant St., San Francisco, Calif.

Steel

Allegheny Ludium Steel Corp., 2020 Oliver Bldg., Pittsburgh 22, Pa.
American Silver Co., 36-07 Prince St., Flushing, N. Y.
Babcock & Wilcox Co., 161 E. 42nd St., New York 17, N. Y.
Bethlehem Steel Co., Bethlehem, Pa.
Carpenter Steel Co., The, Reading, Pa.
Crucible Steel Co. of America, Henry W. Oliver Bldg., P. O. Box 88, Pittsburgh 30, Pa.
Electric Steel Foundry Co., 2141 N. W. 25th Ave., Portland 10, Ore.
United States Steel Corp., 525 William Penn Place, Pittsburgh 30, Pa.
Vacuum Metals Corp., 70 Memorial Drive, Cambridge 42, Mass.

Steel, Stainless

Allegheny Ludlum Steel Corp., 2020 Oliver Bldg., Pittsburgh 22, Pa.
Alloy Metal Wire Div., H. K. Porter Co., Inc. of Pittsburg, 13th & Pennsylvania Ave., Prospect Park, Pa.
American Silver Co., 36-07 Prince St., Flushing, N. Y.
Babcock & Wilcox Co., 161 E. 42nd St., New York 17, N. Y.
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 10
Bishop & Co., J., Malvern, Pa.
Carpenter Steel Co., The, Reading, Pa.
Chase Brass & Copper Co., Inc., 236 Grand St., Waterbury 20, Conn.
Crucible Steel Co. of America, Henry W. Oliver Bldg., P. O. Box 88, Pittsburgh 30, Pa.
Driver-Harris Co., Harrison, N. J.
Electric Steel Foundry Co., 2141 N. W. 25th Ave., Portland 10, Ore.
Metals & Controls Corp., General Plate Div., Spencer Thermostat Div., Attleboro, Mass.
Pantatron Ltd., Metals Div., Market Bldgs., 29 Mincing Lane, London, E. C. 3, England
Pyro-Metals, Inc., Hudson, Mass.
United States Steel Corp., 525 William Penn Place, Pittsburgh 30, Pa.
Vacuum Metals Corp., 70 Memorial Drive, Cambridge 42, Mass.

Strontium

Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.

Tantalum

American Silver Co., 36-07 Prince St., Flushing, N. Y.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Electro Metallurgical Co., Div. of Union Carbide & Carbon Corp., 30 E. 42nd St., New York 17, N. Y.
Fansteel Metallurgical Corp., North Chicago, Ill.
Metals & Controls Corp., General Plate Div., Spencer Thermostat Div., Attleboro, Mass.
Pantatron Ltd., Metals Div., Market Bldgs., 29 Mincing Lane, London, E. C. 3, England
Shieldalloy Corp., Div. of Metallurg, Inc., 99 Park Ave., New York 16, N. Y.
Vitro Corp. of America, 233 Broadway, New York 7, N. Y.

Thermostatic Bi-Metals

See BI-METALS—Thermostatic

Thorium

Fleischman, Burd & Co., Inc., 22 W. 48th St., New York 36, N. Y.
Metals & Controls Corp., General Plate Div., Spencer Thermostat Div., Attleboro, Mass.
NATIONAL LEAD CO., 111 Broadway, New York 6, N. Y. ADV. PG. 27
Pyro-Metals, Inc., Hudson, Mass.
Sylvania Electric Products, Inc., 1740 Broadway, New York 19, N. Y.

Tin

Alpha Metals, Inc., P. O. Box 34, 56 Water St., Jersey City 4, N. J.
Anchor Metal Co., 244 Boerum St., Brooklyn 6, N. Y.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Division Lead Co., 7742 W. 61st Place, Summit, Ill.
Federated Metals Div., American Smelting & Refining Co., 120 Broadway, New York 5, N. Y.
Mallinckrodt Chemical Works, Second & Mallinckrodt Sts., St. Louis 7, Mo.
Metals & Controls Corp., General Plate Div., Spencer Thermostat Div., Attleboro, Mass.
NATIONAL LEAD CO., 111 Broadway, New York 6, N. Y. ADV. PG. 27
Pantatron Ltd., Metals Div., Market Bldgs., 29 Mincing Lane, London, E. C. 3, England

Titanium

Alloy Metal Wire Div., H. K. Porter Co., Inc. of Pittsburg, 13th & Pennsylvania Ave., Prospect Park, Pa.
American Silver Co., 36-07 Prince St., Flushing, N. Y.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Crucible Steel Co. of America, Henry W. Oliver Bldg., P. O. Box 88, Pittsburgh 30, Pa.
Dow Chemical Co., Midland, Mich.
Driver-Harris Co., Harrison, N. J.
Electro Metallurgical Co., Div. of Union Carbide & Carbon Corp., 30 E. 42nd St., New York 17, N. Y.
Foote Mineral Co., 18 W. Chelten Ave., Philadelphia 44, Pa.
Makepeace Co., D. E., Attleboro, Mass.
Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.
Metal Hydrides, Inc., 12-24 Congress St., Beverly, Mass.
Metals & Controls Corp., General Plate Div., Spencer Thermostat Div., Attleboro, Mass.
NATIONAL LEAD CO., 111 Broadway, New York 6, N. Y. ADV. PG. 27
Northern Electronic & Vacuum Industries, St. Sauveur des Monts, P. Q., P. O. Box 105M, Canada
Pyro-Metals, Inc., Hudson, Mass.

Tungsten

Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Cross Co., H., 15 Beekman St., New York 38, N. Y.
Electro Metallurgical Co., Div. of Union Carbide & Carbon Corp., 30 E. 42nd St., New York 17, N. Y.
Fansteel Metallurgical Corp., North Chicago, Ill.
Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.
North American Philips Co., Inc., 750 S. Fulton Ave., Mt. Vernon, N. Y.
Pantatron Ltd., Metals Div., Market Bldgs., 29 Mincing Lane, London, E. C. 3, England
Shieldalloy Corp., Div. of Metallurg, Inc., 99 Park Ave., New York 16, N. Y.
Sylvania Electric Products, Inc., 1740 Broadway, New York 19, N. Y.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.

Tungsten Ribbon

Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Cross Co., H., 15 Beekman St., New York 38, N. Y.
Pantatron Ltd., Metals Div., Market Bldgs., 29 Mincing Lane, London, E. C. 3, England

Uranium

Mallinckrodt Chemical Works, Second & Mallinckrodt Sts., St. Louis 7, Mo.
Metals & Controls Corp., General Plate Div., Spencer Thermostat Div., Attleboro, Mass.
Vitro Corp. of America, 233 Broadway, New York 7, N. Y.

Uranium—Enriched

Metals & Controls Corp., General Plate Div., Spencer Thermostat Div., Attleboro, Mass.

Vanadium

Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Electro Metallurgical Co., A Div. of Union Carbide & Carbon Corp., 30 E. 42nd St., New York 17, N. Y.
Metals & Controls Corp., General Plate Div., Spencer Thermostat Div., Attleboro, Mass.
Pyro-Metals, Inc., Hudson, Mass.

Zinc

Anchor Metal Co., 244 Boerum St., Brooklyn 6, N. Y.
Baker Chemical Co., J. T., Phillipsburg, N. J.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Division Lead Co., 7742 W. 61st Place, Summit, Ill.
Eagle-Picher Co., Cincinnati, Ohio
Federated Metals Div., American Smelting & Refining Co., 120 Broadway, New York 5, N. Y.
NATIONAL LEAD CO., 111 Broadway, New York 6, N. Y. ADV. PG. 27
Pantatron Ltd., Metals Div., Market Bldgs., 29 Mincing Lane, London, E. C. 3, England

Zirconium

American Silver Co., 36-07 Prince St., Flushing, N. Y.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Electro Metallurgical Co., Div. of Union Carbide & Carbon Corp., 30 E. 42nd St., New York 17, N. Y.
Foote Mineral Co., 18 W. Chelten Ave., Philadelphia 44, Pa.
Makepeace Co., D. E., Attleboro, Mass.
Metal Hydrides, Inc., 12-24 Congress St., Beverly, Mass.
Metals & Controls Corp., General Plate Div., Spencer Thermostat Div., Attleboro, Mass.
NATIONAL LEAD CO., 111 Broadway, New York 6, N. Y. ADV. PG. 27
Pantatron Ltd., Metals Div., Market Bldgs., 29 Mincing Lane, London, E. C. 3, England
Pyro-Metals, Inc., Hudson, Mass.

METERS

See also CONTROLS
GAGES
INDICATORS

METERS—BTU

Beckman & Whitley, Inc., San Carlos, Calif.
Douglas Radio Labs., 176 Norfolk Ave., Boston 19, Mass.
Hagan Corp., 323 Fourth Ave., Pittsburgh 22, Pa.
Hays Corp., Michigan City, Ind.
Infra Electronic Corp., Roseland, N. J.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Back Cover
Weston Electrical Instrument Corp., 614 Frelinghuysen Ave., Newark 5, N. J.

METERS—Counting Rate

Advance Electronics Co., 451 Highland Ave., Passaic, N. J.
ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 150
ATOMIC INSTRUMENT CO., 84 Massachusetts Ave., Cambridge 39, Mass. ADV. PG. Inside Back Cover
BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121
Burndept Ltd., West St., Erith, Kent, United Kingdom
Cinema-Television Ltd., Worsley Bridge Rd., London, S. E. 26, England
Cramer Co., Inc., The, R. W., Box 13, Centerbrook, Conn.
CURTISS-WRIGHT CO., ELECTRONICS DIV., Carlstadt, N. J. ADV. PG. 31
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
Detectron Corp., 5420 Vineland Ave., North Hollywood, Calif.
EKCO ELECTRONICS LTD., EKCO WORKS, Southend-on-Sea, Essex, England. ADV. PG. 127
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
Falk & Co., Ltd., M., 5 Victoria St., London S. W. 1, England
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Flem'ng Radio (Developments) Ltd., 18–20 Laystall St., London, E. C. 1, England
Franklin Electronics, Inc., 415 W. Pike St., Philadelphia 40, Pa.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Goldak Co., 1544 W. Glenoaks Blvd., Glendale 1, Calif.
Hewlett-Packard Co., 395 Page Mill Rd., Palo Alto, Calif.
Infra Electronic Corp., Roseland, N. J.
LaRoe Instruments, Inc., Box 5906, Bethesda 14, Md.
LEIGHTON LABS., H. W., 26 Herman St., Glen Ridge, N. J. ADV. PG. 124
Measurement Engineering Ltd., Arnprior, Ontario, Canada
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
NUCLEAR INSTRUMENT & CHEMICAL CO., 229 W. Erie St., Chicago 10, Ill. ADV. PG. 137
NUCLEAR MEASUREMENTS CORP., 2460 N. Arlington Ave., Indianapolis 18, Ind. ADV. PG. 122
Nuclear Research Corp., Southampton, Pa.
NUCLEONIC CO. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 112
Photocon Research Products, 421 N. Foothill Blvd., Pasadena 7, Calif.
Potter Instrument Co., 115 Cutter Mill Rd., Great Neck, N. Y.
Precision Radiation Instruments, Inc., 2235 S. La Brea Ave., Los Angeles 16, Calif.
Press Wireless Laboratories, Inc., 25 Prospect Place, West Newton 65, Mass.
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
Standard Electronics Research Corp., 2 East End Ave., New York 21, N. Y.
TECHNICAL MEASUREMENT CORP., 140–142 State St., New Haven, Conn. ADV. PG. 128
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
Trott Electronics Co., 1944 Clinton Ave., N., Rochester 21, N. Y.
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 107
Walkirt Co., 145 W. Hazel, Inglewood, Calif.

METERS—Electric

See AMMETERS; VOLTMETERS etc.

METERS—Flow

Ace Glass, Inc., Vineland, N. J.
American Gas Furnace Co., 130 Spring St., Elizabeth, N. J.
Askania Regulator Co., 240 E. Ontario St., Chicago 11, Ill.
B-I-F Industries, Inc., P. O. Box 1342, Providence, R. I.
BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121
Brooks Rotameter Co., Box A-1347, Lansdale, Pa.
Builders-Providence, Inc., Div. of B-I-F Industries, Inc., 530 Harris Ave., Providence 1, R. I.
Daylite Vacuum Products Co., 5207 N. Milwaukee Ave., Chicago 30, Ill.
Eclipse-Pioneer Div., Bendix Aviation Corp., Teterboro, N. J.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Greiner Co., Emil, 26 N. Moore St., New York 13, N. Y.
Hagan Corp., 323 Fourth Ave., Pittsburgh 22, Pa.
Hastings Instrument Co., Super Highway at Pine Ave., Hampton, Va.
Hays Corp., Michigan City, Ind.
Hoke, Inc., Englewood, N. J.
Infra Electronic Corp., Roseland, N. J.
Ketay Instrument Corp., 555 Broadway, New York 12, N. Y.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Maxson Corp., W. L., 460 W. 34th St., New York 1, N. Y.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Back Cover
Republic Flow Meters Co., 2240 Diversey Pkwy., Chicago 47, Ill.
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
Scientific Glass Apparatus Co., Inc., 100 Lakewood Terrace, Bloomfield, N. J.
Simplex Valve & Meter Co., 68th & Upland Sts., Philadelphia 42, Pa.
U. S. Gauge Div., American Machine and Metals, Inc., Sellersville, Pa.
Victory Engineering Corp., Springfield Rd., Union, N. J.
Vitro Corp. of America, 233 Broadway, New York 7, N. Y.

METERS—Gas, Precision Metering

Brooks Rotameter Co., Box A-1347, Lansdale, Pa.
Cutler-Hammer, Inc., 412 N. 12th St., Milwaukee 1, Wis.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Hagan Corp., 323 Fourth Ave., Pittsburgh 22, Pa.
Infra Electronic Corp., Roseland, N. J.
Kahl Scientific Instrument Corp., P. O. Box 1166, El Cajon, Calif.
Labline, Inc., 217 N. Desplaines St., Chicago 6, Ill.
Maxson Corp., W. L., 460 W. 34th St., New York 1, N. Y.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.

METERS—Gauss

CAMBRIDGE INSTRUMENT CO., INC., Grand Central Terminal, New York 17, N. Y. ADV. PG. 136
DYNA LABS., INC., 1075 Stewart Ave., Garden City, N. Y. ADV. PG. 140
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Infra Electronic Corp., Roseland, N. J.
JORDAN ELECTRONIC MFG. CO., INC., Union Bldg., 119 E. Union St., Pasadena 1, Calif. ADV. PG. 129, 136
Marconi Instruments, Ltd., 23 Beaver St., New York 4, N. Y.
Millivac Instruments, 444 Second St., Schenectady, N. Y.
Process & Instruments, 15 Stone Ave., Brooklyn 33, N. Y.
Rawson Electrical Instrument Co., 114 Potter St., Cambridge 42, Mass.
Sensitive Research Instrument Corp., 9 Elm Ave., Mt. Vernon, N. Y.
Varian Associates, 611 Hansen Way, Palo Alto, Calif.

METERS—pH

Beckman Instruments, Inc., 820 Mission St., South Pasadena 183, Calif.
Brush Electronics Co., 3405 Perkins Ave., Cleveland 14, Ohio
CAMBRIDGE INSTRUMENT CO., INC., Grand Central Terminal, New York 17, N. Y. ADV. PG. 136
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Coleman Instruments, Inc., Maywood, Ill.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Heilige, Inc., 877 Stewart Ave., Long Island City 1, N. Y.
Infra Electronic Corp., Roseland, N. J.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 131
Macbeth Corp., P. O. Box 950, Newburgh, N. Y.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Back Cover
Thwing-Albert Instrument Co., Penn St. & Pulaski Ave., Philadelphia 44, Pa.
Wallace & Tiernan Inc., Belleville 9, N. J.
WELCH SCIENTIFIC CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

METERS—Period

Advance Electronics Co., 451 Highland Ave., Passaic, N. J.
ATOMIC INSTRUMENT CO., 84 Massachusetts Ave., Cambridge 39, Mass. ADV. PG. Inside Back Cover
Detectron Corp., 5420 Vineland Ave., North Hollywood, Calif.
Franklin Electronics, Inc., 415 W. Pike St., Philadelphia 40, Pa.
Haydon Mfg. Co., Inc., 2400 Elm St., Torrington, Conn.
Infra Electronic Corp., Roseland, N. J.
J-B-T Instruments, Inc., 441 Chapel St., New Haven 8, Conn.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 131
Potter Instrument Co., 115 Cutter Mill Rd., Great Neck, N. Y.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143

METERS—Recording

See also RECORDERS

Advance Electronics Co., 451 Highland Ave., Passaic, N. J.
B-I-F Industries, Inc., P. O. Box 1342, Providence, R. I.
Brooks Rotameter Co., Box A-1347, Lansdale, Pa.
Builders-Providence, Inc., Div. of B-I-F Industries, Inc., 530 Harris Ave., Providence 1, R. I.
Esterline-Angus Co., Inc., P. O. Box 596, Indianapolis 6, Ind.
Fielden Instrument Div., Robertshaw-Fulton Controls Co., 2920 N. 4th St., Philadelphia 33, Pa.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Hagan Corp., 323 Fourth Ave., Pittsburgh 22, Pa.
Hays Corp., Michigan City, Ind.
Infra Electronic Corp., Roseland, N. J.
L & O Research & Development Corp., 134 N. Wayne Ave., Wayne, Pa.
Larson Instrument Co., 24 Orchard St., Tarrytown, N. Y.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 131
LEIGHTON LABS., H. W., 26 Herman St., Glen Ridge, N. J. ADV. PG. 124
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Measurement Engineering Ltd., Arnprior, Ontario, Canada
Millivac Instruments, 444 Second St., Schenectady, N. Y.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Back Cover
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
Potter Instrument Co., 115 Cutter Mill Rd., Great Neck, N. Y.
Powers Regulator Co., The, 3400 Oakton, Skokie, Ill.
Sanborn Co., 39 Osborn St., Cambridge, Mass.
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
Simplex Valve & Meter Co., 68th & Upland Sts., Philadelphia 42, Pa.
Telecomputing Corp., 133 E. Santa Anita Ave., Burbank, Calif.
Thwing-Albert Instrument Co., Penn St. & Pulaski Ave., Philadelphia 44, Pa.
West Instrument Corp., 525 N. Noble St., Chicago 22, Ill.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.
Wheelco Instruments Div., Barber-Colman Co., Rockford, Ill.

METERS—Roughness

Baker Co., Inc., The, Maplewood, Maine
Brush Electronics Co., 3405 Perkins Ave., Cleveland 14, Ohio
Gulton Mfg. Corp., 212 Durham Ave., Metuchen, N. J.
Infra Electronic Corp., Roseland, N. J.

METERS—Survey, Radiation

See CHAMBERS, Ionization; COUNTERS, etc.

METERS—Thermocouple

Assembly Products, Inc., Chagrin Falls 6, Ohio
Beckman & Whitley, Inc., San Carlos, Calif.
Burlington Instrument Co., 203 N. Third St., Burlington, Iowa
Doelcam Corp., 1400 Soldiers Field Rd., Boston 35, Mass.
Engelhard, Inc., Charles, 850 Passaic St., East Newark, N. J.

Fielden Instrument Div., Robertshaw-Fulton Controls Co., 2920 N. 4th St., Philadelphia 33, Pa.
Fischer Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Fredericks Co., George E., Bethayres, Pa.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Hagan Corp., 323 Fourth Ave., Pittsburgh 22, Pa.
Hastings Instrument Co., Super Highway at Pine Ave., Hampton, Va.
Industrial Controls, Inc., 525 N. Noble St., Chicago 22, Ill.
Infra Electronic Corp., Roseland, N. J.
International Instruments, Inc., P. O. Box 2954, New Haven 15, Conn.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 131
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Millivac Instruments, 444 Second St., Schenectady, N. Y.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Back Cover
Phaostron Co., 151 Pasadena Ave., South Pasadena, Calif.
Pyrometer Instrument Co., Inc., Bergenfield, N. J.
Q.V.S., Inc., 20 N. 15th St., East Orange, N. J.
Rawson Electrical Instrument Co., 114 Potter St., Cambridge 42, Mass.
Sangamo Electric Co., Springfield, Ill.
Sensitive Research Instrument Corp., 9 Elm Ave., Mt. Vernon, N. Y.
Simpson Electric Co., Div. of American Gage & Machine Co., 5208 W. Kinzie St., Chicago 44, Ill.
Supreme, Inc., Box MH552, Greenwood, Miss.
Thwing-Albert Instrument Co., Penn St. at Pulaski Ave., Philadelphia 44, Pa.
WELCH SCIENTIFIC CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148
West Instrument Corp., 525 N. Noble St., Chicago 22, Ill.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa
Wheelco Instruments Div., Barber-Colman Co., Rockford, Ill.
Winslow Co., Inc., 9 Liberty St., Newark, N. J.

METERS—Water Turbidity

GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Hellige, Inc., 877 Stewart Ave., Long Island City 1, N. Y.
Photobell Co., 116 Nassau St., New York 7, N .Y.
Sensitive Research Instrument Corp., 9 Elm Ave., Mt. Vernon, N. Y.

MICA

Asheville-Schoonmaker Co., Inc., 900 Jefferson Ave., Newport News, Va.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Brush Beryllium Co., 4301 Perkins Ave., Cleveland 3, Ohio
Continental-Diamond Fibre Co., Newark, Delaware
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
Electronic Mechanics, Inc., 101 Clifton Blvd., Clifton, N. J.
General Electric Co., Chemical Div., 1 Plastics Ave., Pittsfield, Mass.
Hommel Co., O., 209–213 Fourth Ave., Pittsburgh, Pa.
Mycalex Corp. of America, Clifton Blvd., Clifton, N. J.
Pantatron Ltd., Metals Div., Market Bldgs., 29 Mincing Lane, London, E. C. 3, England
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.

MICROAMMETERS

Applied Physics Corp., 362 W. Colorado Blvd., Pasadena 1, Calif.
Assembly Products, Inc., Chagrin Falls 6, Ohio
Beede Electrical Instrument Co., Inc., Penacook, N. H.
Burlington Instrument Co., 203 N. Third St., Burlington, Iowa
CAMBRIDGE INSTRUMENT CO., INC., Grand Central Terminal, New York 17, N. Y. ADV. PG. 136
Dejur-Amsco Corp., 45–01 Northern Blvd., Long Island City 1, N. Y.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Glenco Corp., Metuchen, N. J.
Greibach Instruments Corp., Durham Ave., Metuchen, N. J.
Heath Co., Benton Harbor, Mich.
Hickok Electrical Instrument Co., 10514 Dupont Ave., Cleveland 8, Ohio
Industrial Control Co., Straight Path & Arlington Ave., Wyandanch, N. Y.
International Instruments, Inc., P. O. Box 2954, New Haven 15, Conn.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 131
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Marion Electrical Instrument Co., 402 Canal St., Manchester, N. H.
Measurement Engineering Ltd., Amprior, Ontario, Canada
Meters, Inc., 5353 N. Keystone Ave., Indianapolis 20, Ind.
Millivac Instruments, 444 Second St., Schenectady, N. Y.
Pace Electrical Instruments Co., Inc., 408 Manhattan Ave., Brooklyn 11, N. Y.
Phaostron Co., 151 Pasadena Ave., South Pasadena, Calif.
Precision Apparatus Co., Inc., 92–27 Horace Harding Blvd., Elmhurst, N. Y.
Q. V. S., Inc., 20 N. 15th St., East Orange, N. J.
RADIO CORPORATION OF AMERICA, TUBE DIV., Harrison, N. J. ADV. PG. 19
Rawson Electrical Instrument Co., 114 Potter St., Cambridge 42, Mass.
SCIENTIFIC SPECIALTIES CORP., Snow & Union Sts., Brighton 35, Mass. ADV. PG. 138
Sensitive Research Instrument Corp., 9 Elm Ave., Mt. Vernon, N. J.
Simpson Electric Co., Div. of American Gage & Machine Co., 5208 W. Kinzie St., Chicago 44, Ill.
Supreme, Inc., Box MH552, Greenwood, Miss.
Triplett Electrical Instrument Co., 286 Harmon Rd., Bluffton, Ohio
Waveforms, Inc., 333 Sixth Ave., New York 14, N. Y.
WELCH SCIENTIFIC CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.
Weston Electrical Instrument Corp., 614 Frelinghuysen Ave., Newark 5, N. J.

MICROCHEMICAL EQUIPMENT

Ace Glass, Inc., Vineland, N. J.
CAMBRIDGE INSTRUMENT CO., INC., Grand Central Terminal, New York 17, N. Y. ADV. PG. 136
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 106
Jarrell-Ash Co., 26 Farwell St., Newtonville, Mass.
LERMAC INC., 5303 Adeline St., Oakland, Calif. ADV. PG. 114
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
Sargent & Co., E. H., 4647 W. Foster Ave., Chicago 30, Ill.
Thermal American Fused Quartz Co., Inc., 18–20 Salem St., Dover, N. J.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

MICROSCOPES—Binocular

Aloe Scientific Div., A. S. Aloe Co., 5655 Kingsbury Blvd., St. Louis 12, Mo.
American Optical Co., Instrument Div., Buffalo 15, N. Y.
Bausch & Lomb Optical Co., 630 St. Paul St., Rochester 2, N. Y.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Edmund Scientific Co., 502 E. Gloucester Pike, Barrington, N. J.
Ferner Co., R. Y., 110 Pleasant St., Malden, Mass.
Jarrell Ash Co., 26 Farwell St., Newtonville, Mass.
Leitz, Inc., E., 468 Fourth Ave., New York, N. Y.
SCIENTIFIC SPECIALTIES CORP., Snow & Union Sts., Brighton 35, Mass. ADV. PG. 138
Sobotka Co., Eric, 104 W. 42nd St., New York, N. Y.

MICROSCOPES—Electron

Cinema-Television Ltd., Worsley Bridge Rd., London, S. E. 26, England
Farrand Optical Co., Inc., Bronx Blvd. & E. 238th St., New York 70, N. Y.
Marconi Instruments, Ltd., 23 Beaver St., New York 4, N. Y.
North American Philips Co., Inc., 750 S. Fulton Ave., Mt. Vernon, N. Y.
Radio Corporation of America, Engineering Products Div., Camden, N. J.
SCIENTIFIC SPECIALTIES CORP., Snow & Union Sts., Brighton 35, Mass. ADV. PG. 138

MICROSCOPES—Laboratory

American Optical Co., Instrument Div., Buffalo 15, N. Y.
Bausch & Lomb Optical Co., 630 St. Paul St., Rochester 2, N. Y.
Buhl Optical Co., 1009 Beech Ave., Pittsburgh 33, Pa.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Edmund Scientific Co., 502 E. Gloucester Pike, Barrington, N. J.
Ferner Co., R. Y., 110 Pleasant St., Malden, Mass.
Gaertner Scientific Corp., 1237 Wrightwood Ave., Chicago, Ill.
Jarrell-Ash Co., 26 Farwell St., Newtonville, Mass.
Leitz, Inc., E., 468 Fourth Ave., New York, N. Y.
Pacific Transducer Corp., 11836 SW Pico Blvd., Los Angeles 64, Calif.
SCIENTIFIC SPECIALTIES CORP., Snow & Union Sts., Brighton 35, Mass. ADV. PG. 138
Sobotka Co., Eric, 104 W. 42nd St., New York, N. Y.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

MICROSCOPES—Petrographic

American Optical Co., Instrument Div., Buffalo 15, N. Y.
Bausch & Lomb Optical Co., 630 St. Paul St., Rochester 2, N. Y.
Ferner Co., R. Y., 110 Pleasant St., Malden, Mass.
Jarrell-Ash Co., 26 Farwell St., Newtonville, Mass.
Leitz, Inc., E., 468 Fourth Ave., New York, N. Y.
Sobotka Co., Eric, 104 W. 42nd St., New York, N. Y.

MICROSCOPES—Stereoscopic

American Optical Co., Instrument Div., Buffalo 15, N. Y.
Bausch & Lomb Optical Co., 630 St. Paul St., Rochester 2, N. Y.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Edmund Scientific Co., 502 E. Gloucester Pike, Barrington, N. J.
Ferner Co., R. Y., 110 Pleasant St., Malden, Mass.
Jarrell-Ash Co., 26 Farwell St., Newtonville, Mass.
Leitz, Inc., E., 468 Fourth Ave., New York, N. Y.
SCIENTIFIC SPECIALTIES CORP., Snow & Union Sts., Brighton 35, Mass. ADV. PG. 138
Sobotka Co., Eric, 104 W. 42nd St., New York, N. Y.

MICROSPECTROSCOPES

Bausch & Lomb Optical Co., 630 St. Paul St., Rochester 2, N. Y.
Jarrell-Ash Co., 26 Farwell St., Newtonville, Mass.
Perkin-Elmer Corp., Norwalk, Conn.
Sobotka Co., Eric, 104 W. 42nd St., New York, N. Y.

MICROTOMES

American Optical Co., Instrument Div., Buffalo 15, N. Y.
Bausch & Lomb Optical Co., 630 St. Paul St., Rochester 2, N. Y.
CAMBRIDGE INSTRUMENT CO., INC., Grand Central Terminal, New York 17, N. Y. ADV. PG. 136
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Custom Scientific Instruments, Inc., P. O. Box 170, Arlington, N. J.
Jarrell-Ash Co., 26 Farwell St., Newtonville, Mass.
Leitz, Inc., E., 468 Fourth Ave., New York, N. Y.
Mico Instrument Co., 82 S. Trowbridge St., Cambridge 38, Mass.
Process & Instruments, 15 Stone Ave., Brooklyn 33, N. Y.
SCIENTIFIC SPECIALTIES CORP., Snow & Union Sts., Brighton 35, Mass. ADV. PG. 138
Sobotka Co., Eric, 104 W. 42nd St., New York, N. Y.
Sorvall, Inc., Ivan, P. O. Box 230 Pearl St., Norwalk, Conn.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

MILLS—Laboratory

Abbe Engineering Co., 50 Church St., New York 7, N. Y.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Colloid Equipment Co., Inc., 19 Murray St., New York 7, N. Y.
FARREL-BIRMINGHAM CO., INC., Ansonia, Conn. ADV. PG. 111
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Hommel Co., O., 209–213 Fourth Ave., Pittsburgh, Pa.
International Engineering, Inc., 1200 Bolander Ave., Dayton, Ohio
U. S. Stoneware Co., Akron 9, Ohio

MIXERS—Laboratory

Abbe Engineering Co., 50 Church St., New York 7, N. Y.
Aloe Scientific Div., A. S. Aloe Co., 5655 Kingsbury Blvd., St. Louis 12, Mo.
Brookfield Engineering Labs., Inc., Porter St., Stoughton, Mass.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Consolidated Siphon Supply Co., Inc., 24 Wooster St., New York, N. Y.
Cooper Co., D. C., 1467 S. Michigan Ave., Chicago, Ill.
Daylite Vacuum Products Co., 5207 N. Milwaukee Ave., Chicago 30, Ill.
FARREL-BIRMINGHAM CO., INC., Ansonia, Conn. ADV. PG. 111
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.

Hellige, Inc., 877 Stewart Ave., Long Island City 1, N. Y.
Hewlett-Packard Co., 395 Page Mill Rd., Palo Alto, Calif.
Hommel Co., O., 209–213 Fourth Ave., Pittsburgh, Pa.
International Engineering, Inc., 1200 Bolander Ave., Dayton, Ohio
Jasonals Chemical Corp., 825 E. 42nd St., Brooklyn 10, N. Y.
Mixing Equipment Co., 192 Mt. Read Blvd., Rochester 11, N. Y.
Patterson-Kelley Co., Inc., East Stroudsburg, Pa.
STOKES MACHINE CO., F. J., 5500 Tabor Rd., Philadelphia 20, Pa. ADV. PG. 24
U. S. Stoneware Co., Akron 9, Ohio
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

MODERATORS—Neutron

See **CARBON**
METALS—Beryllium
WATER—Heavy

MONITORS—Area

ATOMIC INSTRUMENT CO., 84 Massachusetts Ave., Cambridge 39, Mass. ADV. PG. Inside Back Cover
Atomlab, Inc., 489 Fifth Ave., New York 17, N. Y.
BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121
CURTISS-WRIGHT CO., ELECTRONICS DIV., Carlstadt, N. J. ADV. PG. 31
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
Fleming Radio (Developments) Ltd., 18–20 Laystall St., London, E. C. 1, England
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
JORDAN ELECTRONIC MFG. CO., INC., Union Bldg., 119 E. Union St., Pasadena 1, Calif. ADV. PG. 129, 136
Kybernetes Co., 1100 Raymond Blvd., Newark, N. J.
LANDAUER, JR., CO., R. S., P. O. Box 102, Park Forest, Ill. ADV. PG. 134
LaRoe Instruments, Inc., Box 5906, Bethesda 14, Md.
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
NUCLEAR INSTRUMENT & CHEMICAL CORP., 229 W. Erie St., Chicago 10, Ill. ADV. PG. 137
Nuclear Research Corp., Southampton, Pa.
Ohmart Corp., 2236 Bogen St., P. O. Box 67, Sta. B, Cincinnati 22, Ohio
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
St. John X-Ray Laboratory, Califon, N. J.
SCIENTIFIC SPECIALTIES CORP., Snow & Union Sts., Brighton 35, Mass. ADV. PG. 138
TECHNICAL MEASUREMENT CORP., 140–142 State St., New Haven, Conn. ADV. PG. 128
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
Ultrasonic Corp., 640 Memorial Drive, Cambridge 39, Mass.
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 107
Wakefield Industries, Inc., 5108 Grove St., Skokie, Ill.

MONITORS—Radioactivity

See **CHAMBERS, Ionization; COUNTERS, etc.**

MORTAR GRINDERS

Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.

MORTARS—Mullite

Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.

MORTARS & PESTLES

Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Jasonals Chemical Corp., 825 E. 42nd St., Brooklyn 10, N. Y.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

MOTOR STARTERS

ALLEN-BRADLEY CO., 136 W. Greenfield Ave., Milwaukee 4, Wis. ADV. PG. 113
Arrow-Hart & Hegeman Electric Co., 103 Hawthorn St., Hartford 6, Conn.
Bogue Electric Mfg. Co., 52 Iowa Ave., Paterson 3, N. J.
Cutler-Hammer, Inc., 412 N. 12th St., Milwaukee 1, Wis.
Dayton Electric Mfg. Co., 126 S. Oakley Blvd., Chicago 12, Ill.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Infra Electronic Corp., Roseland, N. J.
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., S., Minneapolis, Minn.
Ultrasonic Corp., 640 Memorial Drive, Cambridge 39, Mass.
Ward Leonard Electric Co., 121 South St., Mt. Vernon, N. Y.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.

MOTORS—A-C

Ace Glass, Inc., Vineland, N. J.
Air Associates, Inc., Teterboro, N. J.
Alliance Mfg. Co., Lake Park Blvd., Alliance, Ohio
Allis Co., Louis, 427 E. Stewart St., Milwaukee 7, Wis.
American Electric Motors, Inc., 4811 Telegraph Rd., Los Angeles 22, Calif.
Bill Jack Scientific Instrument Co., P. O. Box C-39, Solana Beach, Calif.
Bogue Electric Mfg. Co., 52 Iowa Ave., Paterson 3, N. J.
Borg Corp., George W., Borg Equipment Div., Janesville, Wis.
Century Electric Co., 1806 Pine St., St. Louis 3, Mo.
Comar Electric Co., 3349 W. Addison St., Chicago 18, Ill.
Connecticut Telephone & Electric Corp., 70 Brittania St., Meriden, Conn.
Continental Electric Co., Inc., 334 Ferry St., Newark 5, N. J.
Cramer Co., Inc., The, R. W., Box 13, Centerbrook, Conn.
Dalmotor Co., 1375 Clay St., Santa Clara, Calif.
Dayton Electric Mfg. Co., 126 S. Oakley Blvd., Chicago 12, Ill.
Eastern Air Devices, Inc., 385 Central Ave., Dover, N. H.
Eclipse-Pioneer Div., Bendix Aviation Corp., Teterboro, N. J.
Electric Indicator Co., Inc., Camp Ave., Springdale, Conn.
Electric Machinery Mfg. Co., 1331 N. E. Tyler St., Minneapolis 13, Minn.
Electric Products Co., 1725 Clarkstone Rd., Cleveland 12, Ohio
Electric Specialty Co., 211 South St., Stamford, Conn.
Electric Steel Foundry Co., 2141 N. W. 25th Ave., Portland 10, Ore.
Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago 5, Ill.
Fasco Industries, Inc., Rochester 2, N. Y.
FORD INSTRUMENT CO., DIV. OF SPERRY CORP., 31–10 Thomas Ave., Long Island City, N. Y. ADV. PG. 105
G-M Laboratories, Inc., 4336 N. Knox Ave., Chicago 41, Ill.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Hayden Mfg. Co., Inc., 2400 Elm St., Torrington, Conn.
Heinze Electric Co., 685 Lawrence St., Lowell, Mass.
Howard Industries, Inc., Divisions: Cyclohm Motor Corp., Electric Motor Corp., Racine, Wis.
Infra Electronic Corp., Roseland, N. J.
Instrument Motors, Acosta St., Stamford, Conn.
International Register Co., 2620 W. Washington Blvd., Chicago 12, Ill.
Leland Electric Co., Div. of American Machine & Foundry Co., 1501 Webster St., Dayton 1, Ohio
Lesa, Via Bergamo 21, Milan, Italy
Mission-Western Engineers, Inc., 132 W. Colorado, Pasadena 1, Calif.
Motoresearch Co., 1600 Junction Ave., Racine, Wis.
National Pneumatic Co., Inc. & Holtzer-Cabot Divisions, 125 Amory St., Boston 19, Mass.
Oster Mfg. Co., John, Avionic Div., 1 Main St., Racine, Wis.
Red Bank Division, Bendix Aviation Corp., Eatontown, N. J.
Redmond Co., Inc., Owosso, Mich.
Robbins & Myers, Inc., 1345 Lagonda Ave., Springfield, Ohio
Sanders Associates, Inc., Nashua, N. H.
Sangamo Electric Co., Springfield, Ill.
Servo-Tek Products Corp., 1086 Goffe Rd., Hawthorne, N. J.
Sessions Clock Co., Industrial Products Div., Forestville, Conn.
Small Motors, Inc., 2076 Elston Ave., Chicago 14, Ill.
United Pressed Products Co., 741 W. Harrison St., Chicago 7, Ill.
U. S. Electrical Motors, Inc., 200 E. Slauson Ave., Los Angeles, Calif.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.

MOTORS—D-C

Ace Glass, Inc., Vineland, N. J.
Air Associates, Inc., Teterboro, N. J.
Allis Co., Louis, 427 E. Stewart St., Milwaukee 7, Wis.
Bogue Electric Mfg. Co., 52 Iowa Ave., Paterson 3, N. J.
Borg Corp., George W. Borg Equipment Div., Janesville, Wis.
Century Electric Co., 1806 Pine St., St. Louis 3, Mo.
Connecticut Telephone & Electric Corp., 70 Brittania St., Meriden, Conn.
Continental Electric Co., Inc., 334 Ferry St., Newark 5, N. J.
Dalmotor Co., 1375 Clay St., Santa Clara, Calif.
Eicor, Inc., 1501 W. Congress St., Chicago 7, Ill.
Electric Indicator Co., Inc., Camp Ave., Springdale, Conn.
Electric Products Co., 1725 Clarkstone Rd., Cleveland 12, Ohio
Electric Specialty Co., 211 South St., Stamford, Conn.
Electric Steel Foundry Co., 2141 N. W. 25th Ave., Portland 10, Ore.
Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago 5, Ill.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Haydon Mfg. Co., Inc., 2400 Elm St., Torrington, Conn.
Heinze Electric Co., 685 Lawrence St., Lowell, Mass.
Howard Industries, Inc., Divisions: Cyclohm Motor Corp., Electric Motor Corp., Racine, Wis.
Infra Electronic Corp., Roseland, N. J.
Instrument Motors, Acosta St., Stamford, Conn.
Leland Electric Co., Div. of American Machine & Foundry Co., 1501 Webster St., Dayton 1, Ohio
Lesa, Via Bergamo 21, Milan, Italy
Mission-Western Engineers, Inc., 132 W. Colorado, Pasadena 1, Calif.
National Pneumatic Co., Inc., & Holtzer-Cabot Divisions, 125 Amory St., Boston 19, Mass.
Oster Mfg. Co., John, Avionic Div., 1 Main St., Racine, Wis.
Red Bank Division, Bendix Aviation Corp., Eatontown, N. J.
Redmond Co., Inc., Owosso, Mich.
Robbins & Myers, Inc., 1345 Lagonda Ave., Springfield, Ohio
Sangamo Electric Co., Springfield, Ill.
Servo-Tek Products Corp., 1086 Goffe Rd., Hawthorne, N. J.
Servomechanisms, Inc., 500 Franklin Ave., Garden City, N. Y.
Sessions Clock Co., Industrial Products Div., Forestville, Conn.
Small Motors, Inc., 2076 Elston Ave., Chicago 14, Ill.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.

MOTORS—Generator

American Electric Motors, Inc., 4811 Telegraph Rd., Los Angeles 22, Calif.
Bill Jack Scientific Instrument Co., P. O. Box C-39, Solana Beach, Calif.
Bogue Electric Mfg. Co., 52 Iowa Ave., Paterson 3, N. J.
Century Electric Co., 1806 Pine St., St. Louis 3, Mo.
Columbia Electric Mfg. Co., 4519 Hamilton Ave., N. E., Cleveland 14, Ohio
Connecticut Telephone & Electric Corp., 70 Brittania St., Meriden, Conn.
Continental Electric Co., Inc., 334 Ferry St., Newark 5, N. J.
Dalmotor Co., 1375 Clay St., Santa Clara, Calif.
Eastern Air Devices, Inc., 385 Central Ave., Dover, N. H.
Eicor, Inc., 1501 W. Congress St., Chicago 7, Ill.
Electric Indicator Co., Inc., Camp Ave., Springdale, Conn.
Electric Machinery Mfg. Co., 1331 N. E. Tyler St., Minneapolis 13, Minn.
Electric Products Co., 1725 Clarkstone Rd., Cleveland 12, Ohio
Electric Specialty Co., 211 South St., Stamford, Conn.
Electric Steel Foundry Co., 2141 N. W. 25th Ave., Portland 10, Ore.
Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago 5, Ill.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Generator Corp., Manassas, Va.
Great Lakes Electric Mfg. Co., 17 S. Desplaines St., Chicago 6, Ill.
Howard Industries, Inc., Divisions: Cyclohm Motor Corp., Electric Motor Corp., Racine, Wis.
Inet Div. of Leach Corp., 4441 Santa Fe Ave., Los Angeles 58, Calif.
Infra Electronic Corp., Roseland, N. J.
Instrument Motors, Acosta St., Stamford, Conn.
Leland Electric Co., Div. of American Machine & Foundry Co., 1501 Webster St., Dayton 1, Ohio
Mission-Western Engineers, Inc., 132 W. Colorado, Pasadena 1, Calif.
Motoresearch Co., 1600 Junction Ave., Racine, Wis.
National Pneumatic Co., Inc., & Holtzer-Cabot Divisions, 125 Amory St., Boston 19, Mass.
Robbins & Myers, Inc., 1345 Lagonda Ave., Springfield, Ohio
Sangamo Electric Co., Springfield, Ill.
Servomechanisms, Inc., 500 Franklin Ave., Garden City, N. Y.
Servo-Tek Products Corp., 1086 Goffe Rd., Hawthorne, N. J.

Small Motors, Inc., 2076 Elston Ave., Chicago 14, Ill.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.

MOTORS—Hydraulic

Denison Engineering Co., 1160 Dublin Road, Columbus 16, Ohio
Eclipse-Pioneer Div., Bendix Aviation Corp., Teterboro, N. J.
FORD INSTRUMENT CO., DIV. OF SPERRY CORP., 31–10 Thomson Ave., Long Island City, N. Y. ADV. PG. 105
Infra Electronic Corp., Roseland, N. J.
Lavoie Laboratories, Morganville, N. J.

MOTORS—Reactor, Control-rod Drive

American Machine & Foundry Co., Atomic Energy Dept., 261 Madison Ave., New York 16, N. Y.
FORD INSTRUMENT CO., DIV. OF SPERRY CORP., 31–10 Thomson Ave., Long Island City, N. Y. ADV. PG. 16
Infra Electronic Corp., Roseland, N. J.

MOTORS—Servo

Air Associates, Inc., Teterboro, N. J.
Arma Corp., Old Country Rd., Garden City, N. Y.
Bogue Electric Mfg. Co., 52 Iowa Ave., Paterson 3, N. J.
Borg Corp., George W., Borg Equipment Div., Janesville, Wis.
Century Electric Co., 1806 Pine St., St. Louis 3, Mo.
Clifton Precision Products Co., Broadway and Maple Ave., Clifton Heights, Pa.
Doelcam Corp., 1400 Soldiers Field Rd., Boston 35, Mass.
Eastern Air Devices, Inc., 385 Central Ave., Dover, N. H.
Eclipse-Pioneer Div., Bendix Aviation Corp., Teterboro, N. J.
Electric Indicator Co., Inc., Camp Ave., Springdale, Conn.
Electric Specialty Co., 211 South St., Stamford, Conn.
FORD INSTRUMENT CO., DIV. OF SPERRY CORP., 31–10 Thomson Ave., Long Island City, N. Y. ADV. PG. 105
G-M Laboratories Inc., 4336 N. Knox Ave., Chicago 41, Ill.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Hagan Corp., 323 Fourth Ave., Pittsburgh 22, Pa.
Howard Industries, Inc., Divisions: Cyclohm Motor Corp., Electric Motor Corp., Racine, Wis.
Infra Electronic Corp., Roseland, N. J.
Instrument Motors, Acosta St., Stamford, Conn.
Ketay Instrument Corp., 555 Broadway, New York 12, N. Y.
KOLLSMAN INSTRUMENT CORP., 80–08 45th Ave., Elmhurst, N. Y. ADV. PG. 11
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Back Cover
Mission-Western Engineers, Inc., 132 W. Colorado, Pasadena 1, Calif.
Muirhead & Co., Ltd., Beckenham, Kent, England
Naer Corp., 2301 S. Purdue Ave., West Los Angeles, Calif.
National Pneumatic Co., Inc., & Holtzer-Cabot Divisions, 125 Amory St., Boston 19, Mass.
Oster Mfg. Co., John, Avionic Div., 1 Main St., Racine, Wis.
Sangamo Electric Co., Springfield, Ill.
Servo-Tek Products Corp., 1086 Goffle Rd., Hawthorne, N. J.
Servomechanisms, Inc., 500 Franklin Ave., Garden City, N. Y
Small Motors, Inc., 2076 Elston Ave., Chicago 14, Ill.
Transicoil Corp., 107 Grand St., New York 13, N. Y.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.

NEUTRON SOURCES

Atomic Energy of Canada, Ltd., Commercial Products Div., P. O. Box 93, Ottawa, Ontario, Canada
CANADIAN RADIUM & URANIUM CORP., 630 Fifth Ave., New York 20, N. Y. ADV. PG. 133
GENERAL ELECTRIC CO., ATOMIC POWER EQUIPMENT COMPONENT, 2900 Campbell Ave., Schenectady 6, N. Y. ADV. PG. 2–6
HIGH VOLTAGE ENGINEERING CORP., 7 University Rd., Cambridge 38, Mass. ADV. PG. 15
Isotope Specialties Co., 3816 San Fernando Rd., Glendale, Calif.
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
Radium Chemical Co., 161 E. 42nd St., New York 17, N. Y.
Scientific Glass Apparatus Co., Inc., 100 Lakewood Terrace, Bloomfield, N. J.
U. S. RADIUM CORP., 535 Pearl St., New York 7, N. Y. ADV. PG. 108

NITROMETERS—Micro

Ace Glass, Inc., Vineland, N. J.
Scientific Glass Apparatus Co., Inc., 100 Lakewood Terrace, Bloomfield, N. J.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

NUCLEAR REACTORS

See REACTORS

OBJECTIVES—Achromatic

American Optical Co., Instrument Div., Buffalo 15, N. Y.
Buhl Optical Co., 1009 Beech Ave., Pittsburgh 33, Pa.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Edmund Scientific Co., 502 E. Gloucester Pike, Barrington, N. J.
Farrand Optical Co., Inc., Bronx Blvd. at E. 238th St., New York 70, N. Y.
Fish-Schurman Corp., 70 Portman Rd., New Rochelle, N. Y.
Gaertner Scientific Corp., 1237 Wrightwood Ave., Chicago, Ill.
Jarrell-Ash Co., 26 Farwell St., Newtonville, Mass.
Phoenix Precision Instrument Co., 3803–05 N. 5th St., Philadelphia, Pa.
SCIENTIFIC SPECIALTIES CORP., Snow & Union Sts., Brighton 35, Mass. ADV. PG. 138
Sobotka Co., Eric, 104 W. 42nd St., New York, N. Y.
Tinsley Laboratories, Inc., 2526 Grove St., Berkeley 4, Calif.

OHMMETERS

Airmec Ltd., High Wycombe, Buckinghamshire, England
Biddle Co., James G., 1316 Arch St., Philadelphia 7, Pa.
Communication Measurement Labs., Inc., 350 Leland Ave., Plainfield, N. J.
Dice Co., J. W., Englewood 41, N. J.
Electronic Instrument Co., Inc., 84 Withers St., Brooklyn 11, N. Y.
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
Epco Electronics, Inc., 140 Liberty St., New York, N. Y.
Esterline-Angus Co., Inc., P. O. Box 596, Indianapolis, Ind.
Feiler Engineering & Mfg. Co., 8026 N. Monticello Ave., Skokie, Ill.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Heath Co., Benton Harbor, Mich.
Hewlett-Packard Co., 395 Page Mill Rd., Palo Alto, Calif.
Hickok Electrical Instrument Co., 10514 Dupont Ave., Cleveland 8, Ohio
Industrial Instruments, Inc., 89 Commerce Rd., Cedar Grove, N. J.
International Instruments, Inc., P. O. Box 2954, New Haven 15, Conn.
Kahn & Co., Inc., 541 Windsor St., Hartford, Conn.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 131
Measurement Engineering Ltd., Amprior, Ontario, Canada
Metropolitan Electronics & Instruments Co., 106 Fifth Ave., New York 11, N. Y.
National Pneumatic Co., Inc., & Holtzer-Cabot Divisions, 125 Amory St., Boston 19, Mass.
Phaostron Co., 151 Pasadena Ave., South Pasadena, Calif.
Precision Apparatus Co., Inc., 92–27 Horace Harding Blvd., Elmhurst, N. Y.
Q.V.S., Inc., 20 N. 15th St., East Orange, N. J.
Radio Corporation of America, Engineering Products Div., Camden, N. J.
RADIO CORPORATION OF AMERICA, TUBE DIV., Harrison, N. J. ADV. PG. 19
Roller-Smith Corp., 1825 W. Market, Bethlehem, Pa.
SCIENTIFIC SPECIALTIES CORP., Snow & Union Sts., Brighton 35, Mass. ADV. PG. 138
Sensitive Research Instrument Corp., 9 Elm Ave., Mt. Vernon, N. Y.
Shallcross Mfg. Co., 10 Jackson Ave., Collingdale, Pa.
Shurite Meters, 35 Hamilton St., New Haven 8, Conn.
Simpson Electric Co., Div. of American Gage & Machine Co., 5208 W. Kinzie St., Chicago 44, Ill.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Specialty Engineering Div. of Specialty Assembling & Packing Co., 79 Clifton Place, Brooklyn 38, N. Y.
Sticht Co., Inc., Herman H., 27 Park Place, New York 7, N. Y.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Triplett Electrical Instrument Co., 286 Harmon Rd., Bluffton, Ohio
WELCH SCIENTIFIC CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.
Weston Electrical Instrument Corp., 614 Frelinghuysen Ave., Newark 5, N. J.
Winslow Co., Inc., 9 Liberty St., Newark, N. J.

OILS—High Vacuum

Buhl Optical Co., 1009 Beech Ave., Pittsburgh, Pa.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Consolidated Vacuum Corp., 1775 Mt. Read Blvd., Rochester 3, N. Y.
High Vacuum Equipment Corp., 349 Lincoln St., Hingham, Mass.
International Pump & Machine Works, 11–13 Governor, Newark 2, N. J.
Jasonals Chemical Corp., 825 E. 42nd St., Brooklyn 10, N. Y.
Kahle Engineering Co., 1307 Seventh St., North Bergen, N. J.
Kellogg Co., M. W., Chemical Mfg. Div., P. O. Box 469, Jersey City 3, N. J.
National Research Corp., 160 Charlemont St., Newton Highlands, Mass.
Shell Oil Co., 50 W. 50th St., New York, N. Y.
WELCH SCIENTIFIC CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148

OPTICAL INSTRUMENTS

American Optical Co., 28 Mechanic St., Southbridge, Mass.
Bausch & Lomb Optical Co., 630 St. Paul St., Rochester 2, N. Y.
Buhl Optical Co., 1009 Beech Ave., Pittsburgh 33, Pa.
Edmund Scientific Co., 502 E. Gloucester Pike, Barrington, N. J.
Farrand Optical Co., Inc., Bronx Blvd. at E. 238th St., New York 70, N. Y.
Fish-Schurman Corp., 70 Portman Rd., New Rochelle, N. Y.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Gaertner Scientific Corp., 1237 Wrightwood Ave., Chicago, Ill.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Hycon Mfg. Co., 2961 E. Colorado St., Pasadena 8, Calif.
KOLLMORGEN OPTICAL CORP., 347 King St., Northampton, Mass. ADV. PG. 120
KOLLSMAN INSTRUMENT CORP., 80–08 45th Ave., Elmhurst, N. Y. ADV. PG. 11
Marconi Instruments, Ltd., 23 Beaver St., New York 4, N. Y.
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
Pacific Transducer Corp., 11836 SW Pico Blvd., Los Angeles 64, Calif.
Perkin-Elmer Corp., Norwalk, Conn.
Precise Measurements Co., 942 Kings Highway, Brooklyn 23, N. Y.
Process & Instruments, 15 Stone Ave., Brooklyn 33, N. Y.
SCIENTIFIC SPECIALTIES CORP., Snow & Union Sts., Brighton 35, Mass. ADV. PG. 138
Telecomputing Corp., 133 E. Santa Anita Ave., Burbank, Calif.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Tinsley Laboratories, Inc., 2526 Grove St., Berkeley 4, Calif.
U. M. & F. Mfg. Corp., 10929 Vanowen St., North Hollywood, Calif.
WELCH SCIENTIFIC CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148
Zenith Optical Lab., 1940 Great Neck Rd., Copiague, N. Y.

OSCILLOGRAPHS

Brush Electronics Co., 3405 Perkins Ave., Cleveland 14, Ohio
CAMBRIDGE INSTRUMENT CO., INC., Grand Central Terminal, New York 17, N. Y. ADV. PG. 136
CENTRAL RESEARCH LABORATORIES, INC., Red Wing, Minn. ADV. PG. 12, 13
Century Geophysical Corp., P. O. Box 6216, Pine Station, Tulsa, Okla.
Cinema-Television Ltd., Worsley Bridge Rd., London, S. E. 26, England
CONSOLIDATED ENGINEERING CORP., 300 N. Sierra Madre Villa, Pasadena 15, Calif. ADV. PG. Inside Front Cover
Cossor, Ltd., 301 Windsor St., Halifax, N. S., Canada
DuMont Labs., Inc., Allen B., 760 Bloomfield Ave., Clifton, N. J.
Edin Co., Inc., 207 Main St., Worcester, Mass.
Electro Medical Lab., Inc., South Woodstock 6, Vt.
Electronic Instrument Co., Inc., 84 Withers St., Brooklyn 11, N. Y.
Ferranti Electric, Inc., 30 Rockefeller Plaza, New York 20, N. Y.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Hathaway Instrument Co., 1315 S. Clarkson St., Denver 10, Colo.
Hickok Electrical Instrument Co., 10514 Dupont Ave., Cleveland 8, Ohio

Hycon Mfg. Co., 2961 E. Colorado St., Pasadena 8, Calif.
Lavoie Laboratories, Morganville, N. J.
Leland Instruments, Ltd., 22–23 Millbank, Westminster, S. W. 1, London, England
Measurement Engineering Ltd., Arnprior, Ontario, Canada
Metropolitan Electronics & Instruments Co., 106 Fifth Ave., New York 11, N. Y.
Midwestern Geophysical Lab., 3400 S. Harvard, Tulsa, Okla.
Miller Instruments, Inc., William, 325 N. Halstead Ave., Pasadena 8, Calif.
Muirhead & Co., Ltd., Beckenham, Kent, England
Photron Instrument Co., 6516 Detroit Ave., Cleveland 2, Ohio
Precision Apparatus Co., Inc., 92–27 Horace Harding Blvd., Elmhurst, N. Y.
Radio Corporation of America, Engineering Products Div., Camden, N. J.
SCIENTIFIC SPECIALTIES CORP., Snow & Union Sts., Brighton 35, Mass. ADV. PG. 138
Sound Apparatus Co., Stirling, N. J.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Texas Instruments, Inc., 6000 Lemmon Ave., Dallas 9, Texas
Volkers & Schaffer Mfg. Corp., P. O. Box 996, Schenectady, N. Y.
Western Sound & Electric Labs., Inc., 805 S. Fifth St., Milwaukee 4, Wis.

OSCILLOSCOPES

Airmec Ltd., High Wycombe, Buckinghamshire, England
American Electronic Laboratories, Inc., 641 Arch St., Philadelphia 6, Pa.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Cinema-Television Ltd., Worsley Bridge Rd., London, S. E. 26, England
Cossor, Ltd., 301 Windsor St., Halifax, N. S., Canada
DuMont Labs., Inc., Allen B., 760 Bloomfield Ave., Clifton, N. J.
Electronic Instrument Co., Inc., 84 Withers St., Brooklyn 11, N. Y.
Electronic Tube Corp., 1200 E. Mermaid Lane, Philadelphia 18, Pa.
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
Fleming Radio (Developments) Ltd., 18–20 Laystall St., London, E. C. 1, England
Franklin Electronics, Inc., 415 W. Pike St., Philadelphia 40, Pa.
Hickok Electrical Instrument Co., The, 10514 Dupont Ave., Cleveland 8, Ohio
Hycon Mfg. Co., 2961 E. Colorado St., Pasadena 8, Calif.
Labscope, Inc., 728 Garden St., Carlstadt, N. J.
Lavoie Laboratories, Morganville, N. J.
Leland Instruments, Ltd., 22–23 Millbank, Westminster, S. W. 1, London, England
Linear Equipment Labs., Inc., Brightwater Place, Massapequa, N. Y.
Measurement Engineering Ltd., Arnprior, Ontario, Canada
Metropolitan Electronics & Instruments Co., 106 Fifth Ave., New York 11, N. Y.
Miller Instruments, Inc., William, 325 N. Halstead Ave., Pasadena 8, Calif.
Precision Apparatus Co., Inc., 92–27 Horace Harding Blvd., Elmhurst, N. Y.
Radio Corporation of America, Engineering Products Div., Camden, N. J.
Radio Sonic Corp., 32 W. 22nd St., New York 10, N. Y.
Servo Corp. of America, 2020 Jericho Turnpike, New Hyde Park, N. Y.
Sierra Electronic Corp., 1050 Brittan Ave., San Carlos, Calif.
Sylvania Electric Products, Inc., 1740 Broadway, New York 19, N. Y.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Trad TV Corp., 1000 First Ave., Asbury Park, N. J.
Triplett Electrical Instrument Co., 286 Harmon Rd., Bluffton, Ohio
WATERMAN PRODUCTS CO., INC., 2245–63 Emerald St., Philadelphia 25, Pa. ADV. PG. 8, 9
Western Sound & Electric Labs., Inc., 805 S. Fifth St., Milwaukee 4, Wis.

OSCILLOSCOPES—Cathode Ray

Airmec Ltd., High Wycombe, Buckinghamshire, England
Allegany Instrument Co., Inc., Cumberland, Md.
BEVA LABORATORY, 1640 Olden Ave., Ext., Trenton 9, N. J. ADV. PG. 116
Browning Laboratories, Inc., 750 Main St., Winchester, Mass.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Cinema-Television, Ltd., Worsley Bridge Rd., London, S. E. 26, England
Computing Devices of Canada, Ltd., P. O. Box 508, Ottawa 4, Ontario, Canada
Cossor, Ltd., 301 Windsor St., Halifax, N. S., Canada
Douglas Radio Labs., 176 Norfolk Ave., Boston 19, Mass.
DuMont Labs., Inc., Allen B., 760 Bloomfield Ave., Clifton, N. J.
Electronic Instrument Co., Inc., 84 Withers St., Brooklyn 11, N. Y.
Electronic Tube Corp., 1200 E. Mermaid Lane, Philadelphia 18, Pa.
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
Federal Telephone & Radio Co., A. Div. of International Telephone & Telegraph Corp., 100 Kingsland Rd., Clifton, N. J.
Fleming Radio (Developments) Ltd., 18–20 Laystall St., London, E. C. 1, England
Franklin Electronics, Inc., 415 W. Pike St., Philadelphia 40, Pa.
Heath Co., Benton Harbor, Mich.
Hickok Electrical Instrument Co., The, 10514 Dupont Ave., Cleveland 8, Ohio
Hycon Mfg. Co., 2961 E. Colorado St., Pasadena 8, Calif.
Laboratory for Electronics, Inc., 75 Pitts St., Boston 14, Mass.
Labscope, Inc., 728 Garden St., Carlstadt, N. J.
Lavoie Laboratories, Morganville, N. J.
Leland Instruments Ltd., 22–23 Millbank, Westminster, S. W. 1, London, England
Metropolitan Electronics & Instruments Co., 106 Fifth Ave., New York 11, N. Y.
Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.
Miller Instruments, Inc., William, 325 N. Halstead Ave., Pasadena 8, Calif.
New London Instrument Co., P. O. Box 189, New London, Conn.
Precision Apparatus Co., Inc., 92–27 Horace Harding Blvd., Elmhurst, N. Y.
Radio City Products Co., Inc., Centre & Glendale Sts., Easton, Pa.
Radio Corporation of America, Engineering Products Div., Camden, N. J.
RADIO CORPORATION OF AMERICA, TUBE DIV., Harrison, N. J. ADV. PG. 19
Radio Sonic Corp., 32 W. 22nd St., New York 10, N. Y.
Simpson Electric Co., Div. of American Gage & Machine Co., 5208 W. Kinzie St., Chicago 44, Ill.
Spencer-Kennedy Labs., Inc., 186 Massachusetts Ave., Cambridge 39, Mass.
Sunshine Scientific Instrument, 180–12 Grant Ave., Philadelphia 15, Pa.
Sylvania Electric Products, Inc., 1740 Broadway, New York 19, N. Y.
Tektronix, Inc., P. O. Box 831, Portland 7, Ore.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Triplett Electrical Instrument Co., 286 Harmon Rd., Bluffton, Ohio
Twentieth Century Electronics, Ltd., Dunbar Works, Dunbar St., West Norwood, London, S. E. 27, England
Volkers & Schaffer Mfg. Corp., P. O. Box 996, Schenectady, N. Y.
WATERMAN PRODUCTS CO., INC., 2445–63 Emerald St., Philadelphia 25, Pa. ADV. PG. 8, 9
Western Sound & Electric Labs., Inc., 805 S. Fifth St., Milwaukee 4, Wis.

OVENS—Constant Temperature

Acme Electric Heating Co., Inc., 1205 Washington St., Boston, Mass.
American Instrument Co., Inc., 8030 Georgia Ave., Silver Spring, Md.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Cooper Co., D. C., 1467 S. Michigan Ave., Chicago, Ill.
Cox & Co., Inc., 115 E. 23rd St., New York 10, N. Y.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Grieve-Hendry Co., 1401–17 W. Carroll Ave., Chicago 7, Ill.
Huppert Co., K. H., 6830 S. Cottage Grove Ave., Chicago 37, Ill.
Kahle Engineering Co., 1307 Seventh St., North Bergen, N. J.
L & O Research & Development Corp., 134 N. Wayne Ave., Wayne, Pa.
Labline, Inc., 217 N. Desplaines St., Chicago 6, Ill.
Lavoie Laboratories, Morganville, N. J.
Lydon Bros., Inc., 85 Zabriskie St., Hackensack, N. J.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
Rockwell Co., W. S., 200 Eliot St., Fairfield, Conn.
Sargent & Co., E. H., 4647 W. Foster Ave., Chicago 30, Ill.
Steiner-Ives Co., Springfield Rd., Union, N. J.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Tenney Engineering, Inc., 1090 Springfield Rd., Union, N. J.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

OVENS—Laboratory

Acme Electric Heating Co., Inc., 1205 Washington St., Boston, Mass.
American Gas Furnace Co., 130 Spring St., Elizabeth, N. J.
American Instrument Co., Inc., 8030 Georgia Ave., Silver Spring, Md.
Bristol Engineering Corp., Lincoln Ave. & Pond St., Bristol 1, Pa.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Cooper Co., D. C., 1467 S. Michigan Ave., Chicago, Ill.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Grieve-Hendry Co., 1401–17 W. Carroll Ave., Chicago 7, Ill.
Kahle Engineering Co., 1307 Seventh St., North Bergen, N. J.
Labline, Inc., 217 N. Desplaines St., Chicago 6, Ill.
Lydon Bros., Inc., 85 Zabriskie St., Hackensack, N. J.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
Rockwell Co., W. S., 200 Eliot St., Fairfield, Conn.
Sargent & Co., E. H., 4647 W. Foster Ave., Chicago 30, Ill.
Steiner-Ives Co., Springfield Rd., Union, N. J.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Tenney Engineering, Inc., 1090 Springfield Rd., Union, N. J.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

OVENS—Vacuum

Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Consolidated Vacuum Corp., 1775 Mt. Read Blvd., Rochester 3, N. Y.
Eisler Engineering Co., 760 S. 13th St., Newark 3, N. J.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
High Vacuum Equipment Corp., 349 Lincoln St., Hingham, Mass.
International Pump & Machine Works, 11–13 Governor St., Newark 2, N. J.
International Radiant Corp., 40 Matinecock Ave., Port Washington, N. Y.
Kahle Engineering Co., 1307 Seventh St., North Bergen, N. J.
Labline, Inc., 217 N. Desplaines St., Chicago 6, Ill.
Measurement Engineering Ltd., Arnprior, Ontario, Canada
Naer Corp., 2301 S. Purdue Ave., West Los Angeles, Calif.
National Research Corp., 160 Charlemont St., Newton Highlands, Mass.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Steiner-Ives Co., Springfield Rd., Union, N. J.
STOKES MACHINE CO., F. J., 5500 Tabor Rd., Philadelphia 20, Pa. ADV. PG. 24
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.

PAINTS—Protective

Air Associates, Inc., Teterboro, N. J.
Amercoat Corp., 4809 Firestone Blvd., South Gate, Calif.
American Resinous Chemicals Corp., 103 Foster St., Peabody, Mass.
Arco Co., 7301 Bessemer Ave., Cleveland 27, Ohio
Atlas Mineral Products Co., 131 Norman St., Mertztown, Pa.
Bisonite Co., Inc., P. O. Box 84, Kenmore Station, Buffalo 17, N. Y.
Borne Scrymser Co., 632 Front St., Elizabeth, N. J.
Carboline Co., 331 Thornton, St. Louis 19, Mo.
Devoe & Raynolds Co., Inc., 787 First Ave., New York, N. Y.
du Pont de Nemours & Co., Inc., E. I., Wilmington 98, Del.
Eastern Precision Resistor Corp., 130–11 90th Ave., Richmond Hill, N. Y.
Emerson & Cuming, Inc., 869 Washington St., Canton, Mass.
General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.
Glidden Co., 11001 Madison Ave., Cleveland 2, Ohio
Goodyear Tire & Rubber Co., Akron, Ohio
Horn Co., Inc., A. C., 10th St. & 44th Ave., Long Island City 1, N. Y.
Houghton Laboratories, Inc., 322 Bush St., Olean, N. Y.
HURON INDUSTRIES, P. O. Box 557, Port Huron, Mich. ADV. PG. 146
Irvington Varnish & Insulator Div. of Minnesota Mining & Mfg. Co., 10 Argyle Terrace, Irvington, N. J.

Knight, Maurice A., 171 Kelly Ave., Akron, Ohio
Maas & Waldstein Co., 2121 McCarter Highway, Newark 4, N. J.
NATIONAL LEAD CO., 111 Broadway, New York 6, N. Y. ADV. PG. 27
Prufcoat Laboratories, Inc., 63 Main St., Cambridge, Mass.
Reliance Paint Co., Corrosite Div., 64 S. 6th St., Brooklyn 11, N. Y.
Rubber & Plastics Compound Co., Inc., 30 Rockefeller Plaza, New York 20, N. Y.
Sauereisen Cements Co., Sauereisen Bldg., Pittsburgh 15, Pa.
Union Bay State Chemical Co., Inc., 491 Main St., Cambridge 42, Mass.
United Chromium, Incorporated, 100 E. 42nd St., New York, N. Y.
U. S. Stoneware Co., Akron 9, Ohio
Vamiton Co., 416 N. Varney St., Burbank, Calif.
Vorac Co., 147 Meadow Rd., Rutherford, N. J.

PANELS & WALLBOARD

Aetna Plywood & Veneer Co., 1731 N. Elston Ave., Chicago 22, Ill.
Armstrong Cork Co., 1010 Concord St., Lancaster, Pa.
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 10
Johns-Manville, 22 E. 40th St., New York 16, N. Y.
Keller Products, Inc., Manchester, N. H.
Technical Ply-Woods, 226 N. LaSalle St., Chicago, Ill.

PAPER—Electrosensitive Recording

Alden Electronics & Impulse Recording Equipment Co., Westboro, Mass.
Alfax Paper & Engineering Co., P. O. Box 125, Westboro, Mass.
Edin Co., Inc., 207 Main St., Worcester, Mass.
Sound Apparatus Co., Stirling, N. J.
Times Facsimile Corp., 540 W. 58th St., New York 19, N. Y.

PERISCOPES

See also VIEWING EQUIPMENT

Belock Instrument Corp., 13–11 111th St., College Point, N. Y.
Buhl Optical Co., 1009 Beech Ave., Pittsburgh, Pa.
Edmund Scientific Co., 502 E. Gloucester Pike, Barrington, N. J.
Farrand Optical Co., Inc., Bronx Blvd. at E. 238th St., New York 70, N. Y.
Fish-Schurman Corp., 70 Portman Rd., New Rochelle, N. Y.
GENERAL ELECTRIC CO., ATOMIC POWER EQUIPMENT COMPONENT, 2900 Campbell Ave., Schenectady 6, N. Y. ADV. PG. 2–6
KOLLMORGEN OPTICAL CORP., 347 King St., Northampton, Mass. ADV. PG. 120
PENBERTHY INSTRUMENT CO., HI-D DIVISION, 666 Adams St., Seattle 8, Wash. ADV. PG. 146
Perkin-Elmer Corp., Norwalk, Conn.
RAY-PROOF CORP., 513 W. 54th St., New York, N. Y. ADV. PG. 22
Tinsley Laboratories, Inc., 2526 Grove St., Berkeley 4, Calif.
Zenith Optical Laboratory, 1940 Great Neck Road, Copiague, N. Y.

PHARMACEUTICALS—Radioactive

Abbott Laboratories, North Chicago, Ill.
ATOMIC RESEARCH LABORATORY, 2633 Santa Monica Blvd., Santa Monica, Calif. ADV. PG. 142
Bio-Rad Laboratories, 800 Delaware St., Berkeley, Calif.
Isotope Specialties Co., 3816 San Fernando Rd., Glendale, Calif.
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23

PHOSPHORS—Scintillation

ATOMIC INSTRUMENT CO., 84 Massachusetts Ave., Cambridge 39, Mass. ADV. PG. Inside Back Cover
CANADIAN RADIUM & URANIUM CORP., 630 Fifth Ave., New York 20, N. Y. ADV. PG. 133
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
du Pont de Nemours & Co., Inc., E. I., Wilmington 98, Del.
EKCO ELECTRONICS LTD., EKCO WORKS, Southend-on-Sea, Essex, England. ADV. PG. 127
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Harshaw Chemical Co., 1945 E. 97th St., Cleveland 6, Ohio
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
NATIONAL RADIAC, INC., 10 Crawford St., Newark 2, N. J. ADV. PG. 21
PILOT CHEMICALS INC., 47 Felton St., Waltham 54, Mass. ADV. PG. 139
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
Standard Electronics Research Corp., 2 East End Ave., New York 21, N. Y.
Sylvania Electric Products, Inc., 1740 Broadway, New York 19, N. Y.
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23

PHOTOGRAPHIC FILM—for Dosimeters

du Pont de Nemours & Co., Inc., E. I., Wilmington 98, Del.
LANDAUER, JR., CO., R. S., P. O. Box 102, Park Forest, Ill. ADV. PG. 134
Minimax Co., 5905 N. Clark St., Chicago 26, Ill.

PHOTOGRAPHIC MATERIALS—Films and Papers for Recording Instruments

Ansco Division, General Aniline & Film Corp., Binghamton, N. Y.
du Pont de Nemours & Co., Inc., E. I., Wilmington 98, Delaware
Eastman Kodak Co., Rochester 3, N. Y.
Jarrell-Ash Co., 26 Farwell St., Newtonville, Mass.
North American Philips Co., Inc., 750 S. Fulton Ave., Mt. Vernon, N. Y.
Polaroid Corp., Cambridge 39, Mass.
Sound Apparatus Co., Stirling, N. J.

PHOTOGRAPHIC MATERIALS—Spectrographic Instruments

Eastman Kodak Co., Rochester 3, N. Y.
Jarrell-Ash Co., 26 Fawell St., Newtonville, Mass.
X-Ray Dept. of General Electric Co., 4855 Electric Ave., Milwaukee, Wis.

PHOTOGRAPHIC PLATES & FILM—Nuclear

Eastman Kodak Co., Rochester 3, N. Y.
Jarrell-Ash Co., 26 Farwell St., Newtonville, Mass.

PHOTOMETERS—Electric

Baldwin Instrument Co., Ltd., Brooklands Works, Dartford, Kent, England
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Electrodyne Co., Endicott St., Norwood, Mass.
Falk & Co., Ltd., M., 5 Victoria St., London S. W. 1, England
Farrand Optical Co., Inc., Bronx Blvd. at E. 238th St., New York 70, N. Y.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Hellige, Inc., 877 Stewart Ave., Long Island City 1, N. Y.
Leitz, Inc., E., 468 Fourth Ave., New York, N. Y.
Phoenix Precision Instrument Co., 3803–05 North 5th St., Philadelphia, Pa.
Sobotka Co., Eric, 104 W. 42nd St., New York, N. Y.
WELCH SCIENTIFIC CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148
Weston Electrical Instrument Corp., 614 Frelinghuysen Ave., Newark 5, N. J.

PHOTOMETERS—Flame

Baird Associates, Inc., 33 University Rd., Cambridge 38, Mass.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Falk & Co., Ltd., M., 5 Victoria St., London S. W. 1, England
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Jarrell-Ash Co., 26 Farwell St., Newtonville, Mass.
Kruger Instruments, Harold, Box 164, San Gabriel, Calif.
Perkin-Elmer Corp., Norwalk, Conn.
Phoenix Precision Instrument Co., 3803–05 N. 5th St., Philadelphia, Pa.
Process & Instruments, 15 Stone Ave., Brooklyn 33, N. Y.
Sobotka Co., Eric, 104 W. 42nd St., New York, N. Y.

PHOTOMETERS—Light-Transmission

Baldwin Instrument Co., Ltd., Brooklands Works, Dartford, Kent, England
Electro-Physics Co., 287-L Broadway, New York 7, N. Y.
Falk & Co., Ltd., H., 5 Victoria St., London S. W. 1, England
Farrand Optical Co., Inc., Bronx Blvd. at E. 238th St., New York 70, N. Y.
Gaertner Scientific Corp., 1237 Wrightwood Ave., Chicago, Ill.
Hellige, Inc., 877 Stewart Ave., Long Island City 1, N. Y.
Instrument Development Labs., Inc., 163 Highland Ave., Needham Heights, Mass.
LEIGHTON LABS., H. W., 26 Herman St., Glen Ridge, N. J. ADV. PG. 124
Matthew Laboratories, 345 Nepperhan Ave., Yonkers 2, N. Y.
National Cine Equipment Co., Inc., 209 W. 48th St., New York, N. Y.
Phoenix Precision Instrument Co., 3803–05 North 5th St., Philadelphia, Pa.
Sobotka Co., Eric, 104 W. 42nd St., New York, N. Y.
WELCH SCIENTIFIC INSTRUMENT CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148

PHOTOMICROGRAPHIC EQUIPMENT

American Optical Co., Instrument Div., Buffalo 15, N. Y.
Bausch & Lomb Optical Co., 630 St. Paul St., Rochester 2, N. Y.
Ferner Co., R. Y., 110 Pleasant St., Malden, Mass.
Fish-Schurman Corp., 70 Portman Rd., New Rochelle, N. Y.
Jarrell-Ash Co., 26 Farwell St., Newtonville, Mass.
Leitz, Inc., E., 468 Fourth Ave., New York, N. Y.
Sobotka Co., Eric, 104 W. 42nd St., New York, N. Y.

PIPE—Acid Proof

American Locomotive Co., Bldg. 143, Schenectady, N. Y.
Anchor Metal Co., 244 Boerum St., Brooklyn 6, N. Y.
Amersil Co., Inc., 683 Ramsey Ave., Hillside, N. J.
Astell & Co., Inc., John B., 90 W. Broadway, New York 7, N. Y.
Atlas Mineral Products Co., 131 Norman St., Mertztown, Pa.
BLICKMAN, INC., S., 7900 Gregory Ave., Weehawken, N. J. ADV. PG. 32
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 106
Division Lead Co., 7742 W. 61st Place, Summit, Ill.
Electro Chemical Supply & Engineering Co., 750 Broad St., Emmaus, Pa.
Electronic Mechanics, Inc., 101 Clifton Blvd., Clifton, N. J.
Engineering Corp. of America, 201 Grove St., Westfield, N. J.
Fansteel Metallurgical Corp., North Chicago, Ill.
General Ceramics & Steatite Corp., 250 Crows Mill Road, Keasbey, N. J.
Haynes Stellite Co., A Div. of Union Carbide & Carbon Corp., 725 S. Lindsay St., Kokomo, Ind.
Johns-Manville, 22 E. 40th St., New York 16, N. Y.
Knapp Mills, Inc., 23–15 Borden Ave., Long Island City, N. Y.
Knight, Maurice A., 171 Kelly Ave., Akron, Ohio
Lapp Insulator Co., Inc., 31 Gilbert St., LeRoy, N. Y.
NATIONAL LEAD CO., 111 Broadway, New York 6, N. Y. ADV. PG. 27
Pfaudler Co., 1002 West Ave., Rochester, N. Y.
RAY-PROOF CORP., 513 W. 54th St., New York, N. Y. ADV. PG. 22
Thermal American Fused Quartz Co., Inc., 18–20 Salem St., Dover, N. J.
U. S. GASKET CO., FLUOROCARBON PRODUCTS, INC., DIV., 600 N. 10th St., Camden 1, N. J. ADV. PG. 149
U. S. Stoneware Co., Akron 9, Ohio
Vanton Pump & Equipment Corp., 350 Fifth Ave., New York 1, N. Y.

PIPE—Glass

CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 106
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
LERMAC INC., 5303 Adeline St., Oakland, Calif. ADV. PG. 114
Phoenix Precision Instrument Co., 3803–05 North 5th St., Philadelphia, Pa.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.

PIPE—Hard Rubber

Goodyear Tire & Rubber Co., Akron, Ohio
Luzerne Rubber Co., Muirhead Ave., Trenton, N. J.
Minor Rubber Co., 49 Ackerman St., Bloomfield, N. J.
Pantatron Ltd., Metals Div., Market Bldgs., 29 Mincing Lane, London, E. C. 3, England
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.
Vanton Pump & Equipment Corp., 350 Fifth Ave., New York 1, N. Y.

PIPE—Metal

Accurate Sheet Metal & Mfg. Works, 2336–38 Milwaukee Ave., Chicago 47, Ill.
Alpha Metals, Inc., P. O. Box 34, 56 Water St., Jersey City 4, N. J.
Aluminum Co. of America, Alcoa Bldg., Pittsburgh 19, Pa.
American Brass Co., Waterbury 20, Conn.
American Locomotive Co., Bldg. 143, Schenectady, N. Y.
Astell & Co., Inc., John B., 90 West Broadway, New York 7, N. Y.
Babcock & Wilcox Co., 161 E. 42nd St., New York 17, N. Y.
Bethlehem Steel Co., Bethlehem, Pa.
Bishop & Co., J., Malvern, Pa.
BLICKMAN, INC., S., 7900 Gregory Ave., Weehawken, N. J. ADV. PG. 32
Bridgeport Brass Co., 30 Grand St., Bridgeport, Conn.
Chase Brass & Copper Co., Inc., 236 Grand St., Waterbury 20, Conn.
Crucible Steel Co. of America, Henry W. Oliver Bldg., F. O. Box 88, Pittsburgh 30, Pa.
Division Lead Co., 7742 W. 61st Place, Summit, Ill.
Emerson-Sack Warner Corp., 150 Dorchester Ave., South Boston, Mass.
Electric Steel Foundry Co., 2141 N. W. 25th Ave., Portland 10, Ore.
Foster Wheeler Corp., 165 Broadway, New York 6, N. Y.
Haynes Stellite Co., A Div. of Union Carbide & Carbon Corp., 725 S. Lindsay St., Kokomo, Ind.
International Nickel Co., Inc., 67 Wall St., New York 5, N. Y.
Knapp Mills, Inc., 23–15 Borden Ave., Long Island City 1, N. Y.
Pantatron Ltd., Metals Div., Market Bldgs., 29 Mincing Lane, London, E. C. 3, England
Revere Copper & Brass, Inc., 230 Park Ave., New York 17, N. Y.
Star Stainless Screw Co., 226 Union Blvd., Paterson 2, N. J.

PIPE—Plastic

Astell & Co., Inc., John B., 90 W. Broadway, New York 7, N. Y.
Atlas Mineral Products Co., 131 Norman St., Mertztown, Pa.
Electro Chemical Supply & Engineering Co., 750 Broad St., Emmaus, Pa.
Electronic Mechanics, Inc., 101 Clifton Blvd., Clifton, N. J.
Engineering Corp. of America, 201 Grove St., Westfield, N. J.
Houghton Laboratories, Inc., 322 Bush St., Olean, N. Y.
Irvington Varnish & Insulator Div. of Minnesota Mining & Mfg. Co., 10 Argyle Terrace, Irvington, N. J.
Knapp Mills, Inc., 23–15 Borden Ave., Long Island City 1, N. Y.
Minor Rubber Co., 49 Ackerman St., Bloomfield, N. J.
Murray Plastics Co., 26 Cottage St., Poughkeepsie, N. Y.
Pantatron Ltd., Metals Div., Market Bldgs., 29 Mincing Lane, London, E. C. 3, England
Polymer Corp. of Pennsylvania, Reading, Pa.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
U. S. GASKET CO., FLUOROCARBON PRODUCTS, INC., DIV., 600 N. 10th St., Camden 1, N. J. ADV. PG. 149
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.
Vanton Pump & Equipment Corp., 350 Fifth Ave., New York 1, N. Y.

PIPETTES

Abbott Laboratories, North Chicago, Ill.
Ace Glass, Inc., Vineland, N. J.
Atomlab, Inc., 489 Fifth Ave., New York 17, N. Y.
BLICKMAN, INC., S., 7900 Gregory Ave., Weehawken, N. J. ADV. PG. 32
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 106
Daylite Vacuum Products Co., 5207 N. Milwaukee Ave., Chicago 30, Ill.
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Hellige, Inc., 877 Stewart Ave., Long Island City 1, N. Y.
Jasonals Chemical Corp., 825 E. 42nd St., Brooklyn 10, N. Y.
Kahl Scientific Instrument Corp., P. O. Box 1166, El Cajon, Calif.
LERMAC INC., 5303 Adeline St., Oakland, Calif. ADV. PG. 114
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
Rascher & Betzold, Inc., 730 N. Franklin St., Chicago 10, Ill.
Special Glass Products Co., 10 W. 33rd St., New York 1, N. Y.
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
Wakefield Industries, Inc., 5108 Grove St., Skokie, Ill.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

PIPETTES—Automatic

Ace Glass, Inc., Vineland, N. J.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Daylite Vacuum Products Co., 5207 N. Milwaukee Ave., Chicago 30, Ill.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Hellige, Inc., 877 Stewart Ave., Long Island City 1, N. Y.
Isotope Accessories Co., Box 5458, Philadelphia 43, Pa.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
Rascher & Betzold, Inc., 730 N. Franklin St., Chicago 10, Ill.
Sargent & Co., E. H., 4647 W. Foster Ave., Chicago 30, Ill.
Scientific Glass Apparatus Co., Inc., 100 Lakewood Terrace, Bloomfield, N. J.
Sorvall, Inc., Ivan, P. O. Box 230, Pearl St., Norwalk, Conn.
Special Glass Products Co., 10 W. 33rd St., New York 1, N. Y.
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

PLANCHETS

ATOMIC RESEARCH LABORATORY, 2633 Santa Monica Blvd., Santa Monica, Calif. ADV. PG. 142
Atomlab, Inc., 489 Fifth Ave., New York 17, N. Y.
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
NUCLEAR INSTRUMENT & CHEMICAL CORP., 229 W. Erie St., Chicago 10, Ill. ADV. PG. 137
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23

PLASTICS—Laminated

Aetna Plywood & Veneer Co., 1731 N. Elston Ave., Chicago 22, Ill.
Atlas Mineral Products Co., 131 Norman St., Mertztown, Pa.
Bakelite Co., A Div. of Union Carbide & Carbon Corp., 30 E. 42nd St., New York 17, N. Y.
Beck's, Inc., 298–300 E. Fifth St., St. Paul 1, Minn.
Continental-Diamond Fibre Co., Newark, Delaware
Doehler Metal Furniture Co., Inc., 194 Lexington Ave., New York, N. Y.
Emerson & Cuming Inc., 869 Washington St., Canton, Mass.
Garlock Packing Co., Palmyra, N. Y.
General Electric Co., Chemical Div., 1 Plastics Ave., Pittsfield, Mass.
Goodyear Aircraft Corp., 1210 Massillion Rd., Akron 15, Ohio
Houghton Laboratories, Inc., 322 Bush St., Olean, N. Y.
Irvington Varnish & Insulator Div. of Minnesota Mining & Mfg. Co., 10 Argyle Terrace, Irvington, N. J.
Keller Products, Inc., Manchester, N. H.
Keystone Electronics Corp., 423 Broome St., New York 13, N. Y.
LENNARD CO., INC., P. M., 671 Bergen St., Brooklyn 38, N. Y. ADV. PG. 26
LERMAC INC., 5303 Adeline St., Oakland, Calif. ADV. PG. 114
Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.
Murray Plastics Co., 26 Cottage St., Poughkeepsie, N. Y.
National Vulcanized Fibre Co., Wilmington 99, Del.
Naer Corp., 2301 S. Purdue Ave., West Los Angeles, Calif.
New Hermes Engraving Machine Corp., 13–19 University Place, New York 3, N. Y.
Penn Fibre & Specialty Co., 2020 E. Westmoreland St., Philadelphia 34, Pa.
Plastilight, Inc., Box 214, Stamford, Conn.
Printloid, Inc., 93 Mercer St., New York 12, N. Y.
Rex Corp., The, Hayward Rd., West Acton, Mass.
Rubber & Plastics Compound Co., Inc., 30 Rockefeller Plaza, New York 20, N. Y.
Shamban & Co., W. S., 11617 W. Jefferson Blvd., Culver City, Calif.
Spaulding Fibre Co., Inc., 310 Wheeler St., Tonawanda, N. Y.
Synthane Corp., River Road, Oaks, Pa.
Tri-Point Mfg. & Development Co., 401 Grand St., Brooklyn 11, N. Y.
U. S. GASKET CO., FLUOROCARBON PRODUCTS, INC., DIV., 600 N. 10th St., Camden 1, N. J. ADV. PG. 149
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.

PLASTICS—Protective

American Products Mfg. Co., Inc., 8127–33 Oleander St., New Orleans 18, La.
Bakelite Co., A Div. of Union Carbide & Carbon Corp., 30 E. 42nd St., New York 17, N. Y.
Cooper Co., D. C., 1467 S. Michigan Ave., Chicago, Ill.
Dow Chemical Co., Midland, Mich.
Eastern Precision Resistor Corp., 130–11 90th Ave., Richmond Hill, N. Y.
Electronic Mechanics, Inc., 101 Clifton Blvd., Clifton, N. J.
Emerson & Cuming Inc., 869 Washington St., Canton, Mass.
Houghton Laboratories, Inc., 322 Bush St., Olean, N. Y.
Irvington Varnish & Insulator Div. of Minnesota Mining & Mfg. Co., 10 Argyle Terrace, Irvington, N. J.
Kellogg Co., M. W., Chemical Mfg. Div., P. O. Box 469, Jersey City 3, N. J.
Knapp Mills, Inc., 23–15 Borden Ave., Long Island City 1, N. Y.
LENNARD CO., INC., P. M., 671 Bergen St., Brooklyn 38, N. Y. ADV. PG. 26
Maxwell Rubber Products Corp., Industrial St., W., Clifton, N. J.
Monsanto Chemical Co., 1700 S. Second St., St. Louis 1, Mo.
Pantatron Ltd., Metals Div., Market Bldgs., 29 Mincing Lane, London, E. C. 3, England
Polymer Corp. of Pennsylvania, Reading, Pa.
Printloid, Inc., 93 Mercer St., New York 12, N. Y.
Rubber & Plastics Compound Co., Inc., 30 Rockefeller Plaza, New York 20, N. Y.
Shamban & Co., W. S., 11617 W. Jefferson Blvd., Culver City, Calif.
Shell Chemical Corp., 380 Madison Ave., New York 17, N. Y.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
United Chromium Incorporated, 100 E. 42nd St., New York, N. Y.
U. S. GASKET CO., FLUOROCARBON PRODUCTS, INC., DIV., 600 N. 10th St., Camden 1, N. J. ADV. PG. 149
U. S. Stoneware Co., Akron 9, Ohio

PLASTICS—Special Purpose, Irradiated

Atomic Power & Chemicals Corp., 201 Main St., White Plains, N. Y.
Bio-Rad Laboratories, 800 Delaware St., Berkeley, Calif.
General Electric Co., Chemical Div., 1 Plastics Ave., Pittsfield, Mass.
HIGH VOLTAGE ENGINEERING CORP., 7 University Rd., Cambridge 38, Mass. ADV. PG. 15
LENNARD CO., INC., P. M., 671 Bergen St., Brooklyn 38, N. Y. ADV. PG. 26

PLASTICS—Structural

American Products Mfg. Co., Inc., 8127–33 Oleander St., New Orleans 18, La.
Bakelite Co., A Div. of Union Carbide & Carbon Corp., 30 E. 42nd St., New York 17, N. Y.
Bio-Rad Laboratories, 800 Delaware St., Berkeley, Calif.
Crane Packing Co., 1800 Cuyler Ave., Chicago, Ill.
Doehler Metal Furniture Co., Inc., 194 Lexington Ave., New York, N. Y.
Dow Chemical Co., Midland, Mich.
Durez Plastics & Chemicals Inc., 1921 Walck Rd., North Tonawanda, N. Y.
Eastern Precision Resistor Corp., 130–11 90th Ave., Richmond Hill, N. Y.
Electro Chemical Supply & Engineering Co., 750 Broad St., Emmaus, Pa.
Emerson & Cuming Inc., 869 Washington St., Canton, Mass.
Gits Molding Corp., 4600 W. Huron St., Chicago 44, Ill.
Goodyear Aircraft Corp., 1210 Massillion Rd., Akron 15, Ohio
Keller Products, Inc., Manchester, N. H.
Kellogg Co., M. W., Chemical Mfg. Div., P. O. Box 469, Jersey City 3, N. J.
LENNARD CO., INC., P. M., 671 Bergen St., Brooklyn 38, N. Y. ADV. PG. 26
Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.
Murray Plastics Co., 26 Cottage St., Poughkeepsie, N. Y.
Mycalex Corp. of America, Clifton Blvd., Clifton, N. J.

PLOTTERS—Electronic

See also RECORDERS

Anelex Corp., 150 Causeway St., Boston 14, Mass.
Borg Corp., George W., Borg Equipment Div., Janesville, Wis.
Electronic Associates, Inc., Long Branch, N. J.
Epsco, Incorporated, 126 Massachusetts Ave., Boston, Mass.
Magnavox Co., Components Div., Fort Wayne 4, Ind.
SCIENTIFIC SPECIALTIES CORP., Snow & Union Sts., Brighton 35, Mass. ADV. PG. 138
Telecomputing Corp., 133 E. Santa Anita Ave., Burbank, Calif.
Vectron, Inc., 400 Main St., Waltham, Mass.

PLYWOOD—Metal-Clad

BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 10
Division Lead Co., 7742 W. 61st Place, Summit, Ill.
Keller Products, Inc., Manchester, N. H.
RAY-PROOF CORP., 513 W. 54th St., New York, N. Y. ADV. PG. 22
Technical Ply-Woods, 226 N. LaSalle St., Chicago, Ill.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.

POLARIZERS

Bausch & Lomb Optical Co., 630 St. Paul St., Rochester 2, N. Y.
Central Scientific Co., 1700 Irving Park Blvd., Chicago 13, Ill.
Fish-Schurman Corp., 70 Portman Rd., New Rochelle, N. Y.
Pacific Transducer Corp., 11836 SW Pico Blvd., Los Angeles 64, Calif.
Polaroid Corp., Cambridge 39, Mass.

POLAROGRAPHS

CAMBRIDGE INSTRUMENT CO., INC., Grand Central Terminal, New York 17, N. Y. ADV. PG. 136
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 131
Sargent & Co., E. H., 4647 W. Foster Ave., Chicago 30, Ill.

POTENTIOMETERS

Ace Electronics Associates, 125 Rogers Ave., Somerville 44, Mass.
Aerohm Corp., 282 Moody St., Waltham 54, Mass.
Ahrendt Instrument Co., 4910 Calvert Rd., College Park, Md.
Allegany Instrument Co., Inc., Cumberland, Md.
Borg Corp., George W., Borg Equipment Div., Janesville, Wis.
Bristol Co., Waterbury 20, Conn.
Bourns Laboratories, 6135 Magnolia Blvd., Riverside, Calif.
CAMBRIDGE INSTRUMENT CO., INC., Grand Central Terminal, New York 17, N. Y. ADV. PG. 136
Centralab Division of Globe-Union, Inc., 900 E. Keefe Ave., Milwaukee 1, Wis.
Clarostat Mfg. Co., Inc., Dover, N. H.
CURTISS-WRIGHT CO., ELECTRONICS DIV., Carlstadt, N. J. ADV. PG. 31
Daven Co., The, 191 Central Ave., Newark 4, N. J.
Daystrom Instrument Co., Archbald, Pa.
DeJur-Amsco Corp., 45–01 Northern Blvd., Long Island City 1, N. J.
Dwyer Engineering Co., Inc., Box 483, Nashua, N. H.
Edcliff Instruments, 383 N. Foothill Blvd., Pasadena 8, Calif.
EKCO ELECTRONICS LTD., EKCO WORKS, Southend-on-Sea, Essex, England. ADV. PG. 127
Electro Measurements, Inc., 4312 S. E. Stark St., Portland 15, Ore.
Electro-Mec Laboratory, Inc., 21–09 43rd Ave., Long Island City, N. Y.
Electronics Associates, Inc., Long Branch, N. J.
Elektro-Serv Co., 480 Johnson Ave., Brooklyn 37, N. Y.
Fairchild Camera & Instrument Corp., Potentiometer Div., Hicksville, N. Y.
Fielden Instrument Div., Robertshaw-Fulton Controls Co., 2920 N. 4th St., Philadelphia 33, Pa.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Fleming Radio (Developments) Ltd., 18–20 Laystall St., London, E. C. 1, England
FORD INSTRUMENT CO., DIV. OF SPERRY CORP., 31–10 Thomson Ave., Long Island City, N. Y. ADV. PG. 105
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Giannini & Co., G. M., Pasadena 1, Calif.
Gyromechanisms, Inc., Halesite, N. Y.
Helipot Corp., Div. of Beckman Instrument, Inc., 916 Meridian Ave., South Pasadena, Calif.
INTERNATIONAL RESISTANCE CO., 401 N. Broad St., Philadelphia 8, Pa. ADV. PG. 7
K-F Development Co., 2606 Spring St., Redwood City, Calif.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 131
Lesa, Via Bergamo 21, Milan, Italy
Link Aviation, Inc., Binghamton, N. Y.
Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.
Matawan Electronics Co., Inc., 236 Creek Rd., Keansburg, N. J.
Measurement Engineering Ltd., Arnprior, Ontario, Canada
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Back Cover
Muirhead & Co., Ltd., Beckenham, Kent, England
Ohmite Mfg. Co., 3601 Howard St., Skokie, Ill.
Perkin-Elmer Corp., Norwalk, Conn.
Rawson Electrical Instrument Co., 114 Potter St., Cambridge 42, Mass.
Rubicon Co., Ridge Ave. at 35th St., Philadelphia 32, Pa.
Sensitive Research Instrument Corp., 9 Elm Ave., Mt. Vernon, N. Y.
Servomechanisms, Inc., 500 Franklin Ave., Garden City, N. Y.
Sound Apparatus Co., Stirling, N. J.
Stackpole Carbon Co., St. Marys, Pa.
Tech Laboratories, Inc., Bergen & Edsall Blvds., Palisades Park, N. J.
Technology Instrument Corp., 531 Main St., Acton, Mass.
Thwing-Albert Instrument Co., Penn St. & Pulaski Ave., Philadelphia 44, Pa.
U. M. & F. Mfg. Corp., 10929 Vanowen St., North Hollywood, Calif.
Van Dyke Instruments, Inc., P. O. Box 335, St. Petersburg 1, Fla.
Vectron, Inc., 400 Main St., Waltham, Mass.
Waters Manufacturing Inc., 4 Gordon St., Waltham 54, Mass.
WELCH SCIENTIFIC CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148
Weston Electrical Instrument Corp., 614 Frelinghuysen Ave., Newark 5, N. J.
Wheelco Instruments Div., Barber-Colman Co., Rockford, Ill.
Wirt Co., 5221 Greene St., Philadelphia 44, Pa.

POWER PLANTS—Nuclear

ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 150
Babcock & Wilcox Co., 161 E. 42nd St., New York 17, N. Y.
Bogue Electric Mfg. Co., 52 Iowa Ave., Paterson 3, N. J.
GENERAL ELECTRIC CO., ATOMIC POWER EQUIPMENT COMPONENT, 2900 Campbell Ave., Schenectady 6, N. Y. ADV. PG. 2–6
FORD INSTRUMENT CO., DIV. OF SPERRY CORP., 31–10 Thomson Ave., Long Island City, N. Y. ADV. PG. 105
Foster Wheeler Corp., 165 Broadway, New York 6, N. Y.
Kidde Nuclear Laboratories, Inc., Walter, 975 Stewart Ave., Garden City, N. Y.
Perkin Engineering Corp., 345 Kansas St., El Segundo, Calif.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143

POWER SUPPLIES—High Voltage

Aerovox Corp., 740 Belleville Ave., New Bedford, Mass.
Air Associates, Inc., Teterboro, N. J.
Aircraft-Marine Products, Inc., Chemicals & Dielectrics Div., 155 Park St., Elizabethtown, Pa.
Aircraft Transformer Corp., West & Willow Aves., Long Branch, N. J.
Airpax Products Co., Middle River, Baltimore 20, Md.
Alcar Instruments, Inc., 20–21 Wagaraw Rd., Fair Lawn, N. J.
American Electric Motors, Inc., 4811 Telegraph Rd., Los Angeles 22, Calif.
American Television & Radio Co., 300 E. Fourth St., St. Paul 1, Minn.
ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 150
Associated Engineering Corp. of Boston, 65 Kent St., Brookline 46, Mass.
Associated Research, Inc., 3788 W. Belmont, Chicago, Ill.
Atlas Coil, Inc., Cottage St., Derby, Conn.
ATOMIC INSTRUMENT CO., 84 Massachusetts Ave., Cambridge 39, Mass. ADV. PG. Inside Back Cover
Atomlab, Inc., 489 Fifth Ave., New York 17, N. Y.
Belock Instrument Corp., 13–11 111th St., College Point, N. Y.
BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121
Beta Electric Corp., 333 E. 103rd St., New York 29, N. Y.
Bogue Electric Mfg. Co., 52 Iowa Ave., Paterson 3, N. J.
Bracke-Seib X-Ray Co., 293 Third Ave., New York 10, N. Y.
Buck Engineering Co., Inc., 37–41 Marcy St., Freehold, N. J.
Cardwell Electronic Productions Corp., Allen D., 97 Whiting St., Plainville, Conn.
Chatham Electronics Corp., Livingston, N. J.
Cinema-Television Ltd., Worsley Bridge Rd., London S. E. 26, England
CLEGG LABORATORIES, INC., 142 S. Livingston Ave., Livingston, N. J. ADV. PG. 110
Condenser Products Co., 140 Hamilton St., New Haven, Conn.
CURTISS-WRIGHT CO., ELECTRONICS DIV., Carlstadt, N. J. ADV. PG. 31
DeMornay-Bonardi, Inc., 780 S. Arroyo Parkway, Pasadena, Calif.
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
Douglas Radio Labs., 176 Norfolk Ave., Boston 19, Mass.
DuMont Labs., Inc., Allen B., 760 Bloomfield Ave., Clifton, N. J.
Eastern Precision Resistor Corp., 130–11 90th Ave., Richmond Hill, N. Y.
EKCO ELECTRONICS, LTD., EKCO WORKS, Southend-on-Sea, Essex, England. ADV. PG. 127
Electrical & Physical Instrument Corp., 42–19 27th St., Long Island City 1, N. Y.
Electronic Research Associates, Inc., 715 Main St., North Caldwell, N. J.
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
Embassy Engineering Corp., 673 Elton Ave., New York 51, N. Y.
Essex Electronics, Springfield Ave., Berkeley Heights, N. J.
Federal Telephone & Radio Co., A Div. of International Telephone & Telegraph Corp., 100 Kingsland Rd., Clifton, N. J.
Fluke Mfg. Co., Inc., John, 1111 W. Nickerson St., Seattle 99, Wash.
Franklin Electronics, Inc., 415 W. Pike St., Philadelphia 40, Pa.
FURST ELECTRONICS, INC., 3330-A W. Lawrence Ave., Chicago 25, Ill. ADV. PG. 126
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Hewlett-Packard Co., 395 Page Mill Rd., Palo Alto, Calif.
Hycon Mfg. Co., 2961 E. Colorado St., Pasadena 8, Calif.
Industrial Instruments, Inc., 89 Commerce Rd., Cedar Grove, N. J.
Industrial Specialties Corp., 323 Atlantic Ave., Brooklyn 1, N. Y.
Inet Div. of Leach Corp., 4441 Santa Fe Ave., Los Angeles 58, Calif.
Infra Electronic Corp., Roseland, N. J.
Insuline Corp. of America, 186 Granite St., Manchester, N. H.
Interelectronics Corp., 2432 Grand Concourse, New York 58, N. Y.
International Research Associates, 2221 Warwick Ave., Santa Monica, Calif.
James Vibrapowr Co., 4036 N. Rockwell St., Chicago 18, Ill.
Jarrell-Ash Co., 26 Farwell St., Newtonville, Mass.
Jobbins Electronic Enterprises, Menlo Park, Calif.
Kahn & Co., Inc., 541 Windsor St., Hartford, Conn.
KEPCO LABS., 131–38 Sanford Ave., Flushing, N. Y. ADV. PG. 25
Lambda Electronics Corp., 103–02 Northern Blvd., Corona, N. Y.
Leland Instruments, Ltd., 22–23 Millbank, Westminster, S. W. 1, London, England
Levinthal Electronic Products, 2821 Fair Oaks Ave., Redwood City, Calif.
McIntosh Lab., Inc., 320 Water St., Binghamton, N. Y.
Magnatran, Inc., 246 Schuyler Ave., Kearny, N. J.
Magnavox Co., Components Div., Fort Wayne 4, Ind.
Magnetic Research Corp., 200 E. Center St., El Segundo, Calif.
Manson Laboratories, 207 Greenwich Ave., Stamford, Conn.
Matthew Laboratories, 345 Nepperhan Ave., Yonkers 2, N. Y.
Maxson Corp., W. L., 460 W. 34th St., New York 1, N. Y.
Menlo Research Laboratory, Menlo Park, Calif.
Mercury Electronic Co., Box 450, Red Bank, N. J.
Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.
Mission-Western Engineers, Inc., 132 W. Colorado, Pasadena 1, Calif.
Moulic Specialties Co., 1005 W. Washington St., Bloomington, Ill.
Naer Corp., 2301 S. Purdue Ave., West Los Angeles, Calif.
National Spectrographic Labs., Inc., 6300 Euclid Ave., Cleveland 3, Ohio
NEUTRONIC ASSOCIATES, 87–16 116th St., Richmond Hill, N. Y. ADV. PG. 116
New London Instrument Co., P. O. Box 189, New London, Conn.
North American Philips Co., Inc., 750 S. Fulton Ave., Mt. Vernon, N. Y.
Northeastern Engineering, Inc., Manchester, N. H.
Nuclear Research Corp., Southampton, Pa.
NUCLEONIC CO., OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 112

Optical Film Engineering Co., 2731 N. 6th St., Philadelphia 33, Pa.
Oregon Electronic Mfg. Co., 2232 E. Burnside St., Portland 15, Ore.
Ortho Filter Corp., 198 Albion Ave., Paterson 2, N. J.
Perkin Engineering Corp., 345 Kansas St., El Segundo, Calif.
Peschel Electronics, Inc., 13 Garden St., New Rochelle, N. Y.
Plastic Capacitors, Inc., 2511 W. Moffat St., Chicago 47, Ill.
Plastics & Electronics Co., 272 Northland Ave., Buffalo 8, N. Y.
Polarad Electronics Corp., 100 Metropolitan Ave., Brooklyn 11, N. Y.
Power Designs, Inc., 119–22 Atlantic Ave., Richmond Hill 19, N. Y.
Precise Measurements Co., 942 Kings Highway, Brooklyn 23, N. Y.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
Radiation Instrument Co., P. O. Box 733, Silver Spring, Md.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
Radio Sonic Corp., 32 W. 22nd St., New York 10, N. Y.
Raytheon Mfg. Co., Equipment Operations, Waltham 54, Mass.
Resdel Engineering Corp., 2351 Riverside Drive, Los Angeles 39, Calif.
Research Electronics Laboratory, Roslyn, Pa.
Sanders Associates, Inc., Nashua, N. H.
Sangamo Electric Co., Springfield, Ill.
Scientific Electric, 107–119 Monroe St., Garfield, N. J.
SCIENTIFIC SPECIALTIES CORP., Snow & Union Sts., Brighton 35, Mass. ADV. PG. 138
Servo Corp. of America, 2020 Jericho Turnpike, New Hyde Park, N. Y.
Shallcross Mfg. Co., 10 Jackson Ave., Collingdale, Pa.
Sherron Electronics Co., 1201 Flushing Ave., Brooklyn 6, N. Y.
Sorensen & Co., Inc., 375 Fairfield Ave., Stamford, Conn.
SPELLMAN TELEVISION CO., INC., 3029 Webster Ave., Bronx 67, N. Y. ADV. PG. 134
Square Root Mfg. Corp., 391 Saw Mill River Rd., Yonkers, N. Y.
Sunshine Scientific Instrument, 180–12 Grant Ave., Philadelphia 15, Pa.
Tech Laboratories, Inc., Bergen & Edsall Blvds., Palisades Park, N. J.
TECHNICAL MEASUREMENT CORP., 140–142 State St., New Haven, Conn. ADV. PG. 128
Technical Operations, Inc., 6 Schouler Court, Arlington 74, Mass.
Telechrome, Inc., 88 Merrick Rd., Amityville, N. Y.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Thordarson-Meissner Mfg. Divs., Mt. Carmel, Ill.
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
Tresco, 3824 Terrace St., Philadelphia 28, Pa.
Trott Electronics Co., 1944 Clinton Ave., N., Rochester 21, N. Y.
Ultrasonic Corp., 640 Memorial Drive, Cambridge 39, Mass.
United Manufacturing Co., 41 Haig St., Hamden 14, Conn.
Universal Electronics Co., 2012 S. Sepulveda Blvd., Los Angeles 25, Calif.
Vibration Research Labs., Inc., 97 Lake Ave., Tuckahoe, N. Y.
Vickers Electric Division, Vickers, Inc., 1840 Locust St., St. Louis 3, Mo.
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 107
West Coast Electronics Co., 5873 W. Jefferson, Los Angeles 16, Calif.

POWER SUPPLIES—High Voltage, Regulated

Aerovox Corp., 740 Belleville Ave., New Bedford, Mass.
Air Associates, Inc., Teterboro, N. J.
Aircraft Transformer Corp., West & Willow Aves., Long Branch, N. J.
Airpax Products Co., Middle River, Baltimore 20, Md.
Alco Electronics Mfg. Co., 3 Wolcott Ave., Lawrence, Mass.
American Electric Motors, Inc., 4811 Telegraph Rd., Los Angeles 22, Calif.
American Television & Radio Co., 300 E. Fourth St., St. Paul 1, Minn.
ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 150
Associated Engineering Corp. of Boston, 65 Kent St., Brookline 46, Mass.
Associated Research, Inc., 3788 W. Belmont, Chicago, Ill.
Atlas Coil, Inc., Cottage St., Derby, Conn.
ATOMIC INSTRUMENT CO., 84 Massachusetts Ave., Cambridge 39, Mass. ADV. PG. Inside Back Cover
Atomlab, Inc., 489 Fifth Ave., New York 17, N. Y.
Atlas Engineering Co., 3 Edgewood St., Roxbury, Mass.
Belock Instrument Corp., 13–11 111th St., College Point, N. Y.
BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121
Beta Electric Corp., 333 E. 103rd St., New York 29, N. Y.
BEVA LABORATORY, 1640 Olden Ave., Ext., Trenton 9, N. J. ADV. PG. 116
Bogue Electric Mfg. Co., 52 Iowa Ave., Paterson 3, N. J.
Buck Engineering Co., Inc., 37–41 Marcy St., Freehold, N. J.
Burndept Ltd., West St., Erith, Kent, United Kingdom
Cardwell Electronic Productions Corp., Allen D., 97 Whiting St., Plainville, Conn.
Chatham Electronics Corp., Livingston, N. J.
Cinema-Television Ltd., Worsley Bridge Rd., London, S. E. 26, England
CLEGG LABORATORIES, INC., 142 S. Livingston Ave., Livingston, N. J. ADV. PG. 110
CURTISS-WRIGHT CO., ELECTRONICS DIV., Carlstadt, N. J. ADV. PG. 31
DeMornay-Bonardi, Inc., 780 S. Arroyo Parkway, Pasadena, Calif.
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
Douglas Radio Labs., 176 Norfolk Ave., Boston 19, Mass.
Eastern Precision Resistor Corp., 130–11 90th Ave., Richmond Hill, N. Y.
EKCO ELECTRONICS LTD., EKCO WORKS, Southend-on-Sea, Essex, England. ADV. PG. 127
Electronic Research Associates, Inc., 715 Main St., North Caldwell, N. J.
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
Embassy Engineering Corp., 673 Elton Ave., New York 51, N. Y.
Falk & Co., Ltd., M., 5 Victoria St., London S. W. 1, England
Federal Telephone & Radio Co., A Div. of International Telephone & Telegraph Corp., 100 Kingsland Rd., Clifton, N. J.
Fluke Mfg. Co., Inc., John, 1111 W. Nickerson St., Seattle 99, Wash.
Franklin Electronics, Inc., 415 W. Pike St., Philadelphia 40, Pa.
FURST ELECTRONICS, INC., 3330-A W. Lawrence Ave., Chicago 25, Ill. ADV. PG. 126
Hewlett-Packard Co., 395 Page Mill Rd., Palo Alto, Calif.
Hycon Mfg. Co., 2961 E. Colorado St., Pasadena 8, Calif.
Industrial Instruments, Inc., 89 Commerce Rd., Cedar Grove, N. J.
Industrial Specialties Corp., 323 Atlantic Ave., Brooklyn 1, N. Y.
Inet Div. of Leach Corp., 4441 Santa Fe Ave., Los Angeles 58, Calif.
Infra Electronic Corp., Roseland, N. J.
Insuline Corp. of America, 186 Granite St., Manchester, N. H.
International Research Associates, 2221 Warwick Ave., Santa Monica, Calif.
Jarrell-Ash Co., 26 Farwell St., Newtonville, Mass.
Jobbins Electronic Enterprises, Menlo Park, Calif.
Kahn & Co., Inc., 541 Windsor St., Hartford, Conn.
KEPCO LABS., 131–38 Sanford Ave., Flushing, N. Y. ADV. PG. 25
Lambda Electronics Corp., 103–02 Northern Blvd., Corona, N. Y.
LEIGHTON LABS., H. W., 26 Herman St., Glen Ridge, N. J. ADV. PG. 124
Leland Instruments, Ltd., 22–23 Millbank, Westminster, S. W. 1, London, England
Levinthal Electronic Products, 2821 Fair Oaks Ave., Redwood City, Calif.
MacLeod & Hanepol, Inc., 10 Roland St., Charlestown 29, Mass.
Magnavox Co., Components Div., Fort Wayne 4, Ind.
Magnetic Research Corp., 200 E. Center St., El Segundo, Calif.
Manson Laboratories, 207 Greenwich Ave., Stamford, Conn.
Matthaw Laboratories, 345 Nepperhan Ave., Yonkers 2, N. Y.
Mercury Electronic Co., Box 450, Red Bank, N. J.
Mission-Western Engineers, Inc., 132 W. Colorado, Pasadena 1, Calif.
Moulic Specialties Co., 1005 W. Washington St., Bloomington, Ill.
Naer Corp., 2301 S. Purdue Ave., West Los Angeles, Calif.
NEUTRONIC ASSOCIATES, 87–16 116th St., Richmond Hill, N. Y. ADV. PG. 116
North American Philips Co., Inc., 750 S. Fulton Ave., Mt. Vernon, N. Y.
Northeastern Engineering, Inc., Manchester, N. H.
Nuclear Research Corp., Southampton, Pa.
NUCLEONIC CO. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 112
Optical Film Engineering Co., 2731 N. 6th St., Philadelphia 33, Pa.
Oregon Electronic Mfg. Co., 2232 E. Burnside St., Portland 15, Ore.
Ortho Filter Corp., 198 Albion Ave., Paterson 2, N. J.
Perkin Engineering Corp., 345 Kansas St., El Segundo, Calif.
Peschel Electronics, Inc., 13 Garden St., New Rochelle, N. Y.
Plastic Capacitors, Inc., 2511 W. Moffat St., Chicago 47, Ill.
Polarad Electronics Corp., 100 Metropolitan Ave., Brooklyn 11, N. Y.
Polytechnic Research & Development Co., Inc., 202 Tillary St., Brooklyn 1, N. Y.
Power Designs, Inc., 119–22 Atlantic Ave., Richmond Hill 19, N. Y.
Precise Measurements Co., 942 Kings Highway, Brooklyn 23, N. Y.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
Radiation Instrument Co., P. O. Box 733, Silver Spring, Md.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
Radio Sonic Corp., 32 W. 22nd St., New York 10, N. Y.
Raytheon Mfg. Co., Equipment Operations, Waltham 54, Mass.
Resdel Engineering Corp., 2351 Riverside Drive, Los Angeles 39, Calif.
Research Electronics Laboratory, Roslyn, Pa.
Sanders Associates, Inc., Nashua, N. H.
Sangamo Electric Co., Springfield, Ill.
SCIENTIFIC SPECIALTIES CORP., Snow & Union Sts., Brighton 35, Mass. ADV. PG. 138
Servo Corp. of America, 2020 Jericho Turnpike, New Hyde Park, N. Y.
Servomechanisms, Inc., 500 Franklin Ave., Garden City, N. Y.
Shallcross Mfg. Co., 10 Jackson Ave., Collingdale, Pa.
Sorensen & Co., Inc., 375 Fairfield Ave., Stamford, Conn.
SPELLMAN TELEVISION CO., INC., 3029 Webster Ave., Bronx 67, N. Y. ADV. PG. 134
Square Root Mfg. Corp., 391 Saw Mill River Rd., Yonkers, N. Y.
Sunshine Scientific Instrument, 180–12 Grant Ave., Philadelphia 15, Pa.
TECHNICAL MEASUREMENT CORP., 140–142 State St., New Haven, Conn. ADV. PG. 128
Technical Operations, Inc., 6 Schouler Court, Arlington 74, Mass.
Telechrome, Inc., 88 Merrick Rd., Amityville, N. Y.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Thordarson-Meissner Mfg. Divs., Mt. Carmel, Ill.
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
Trott Electronics Co., 1944 Clinton Ave., N., Rochester 21, N. Y.
Ultrasonic Corp., 640 Memorial Drive, Cambridge 39, Mass.
United Manufacturing Co., 41 Haig St., Hamden 14, Conn.
Universal Electronics Co., 2012 S. Sepulveda Blvd., Los Angeles 25, Calif.
Varian Associates, 611 Hansen Way, Palo Alto, Calif.
Vibration Research Labs., Inc., 97 Lake Ave., Tuckahoe, N. Y.
Vickers Electric Division, Vickers, Inc., 1840 Locust St., St. Louis 3, Mo.
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 107
West Coast Electronics Co., 5873 W. Jefferson, Los Angeles 16, Calif.

POWER SUPPLIES—Nuclear

See BATTERIES

POWER SUPPLIES—Regulated

Acme Electric Corp., 31 Water St., Cuba, N. Y.
Aerovox Corp., 740 Belleville Ave., New Bedford, Mass.
Air Associates, Inc., Teterboro, N. J.
Aircraft Transformer Corp., West & Willow Aves., Long Branch, N. J.
Airmec Ltd., High Wycombe, Buckinghamshire, England
Airpax Products Co., Middle River, Baltimore 20, Md.
Alco Electronics Mfg. Co., 3 Wolcott Ave., Lawrence, Mass.
American Electric Motors, Inc., 4811 Telegraph Rd., Los Angeles 22, Calif.
American Electronic Laboratories, Inc., 641 Arch St., Philadelphia 6, Pa.
American Television & Radio Co., 300 E. Fourth St., St. Paul 1, Minn.
Amplifier Corp. of America, 396 Broadway, New York 13, N. Y.
ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 150
Associated Engineering Corp. of Boston, 65 Kent St., Brookline 46, Mass.
Atlas Coil, Inc., Cottage St., Derby, Conn.
Atlas Engineering Co., 3 Edgewood St., Roxbury, Mass.
Atlas Mineral Products Co., 131 Norman St., Mertztown, Pa.
ATOMIC INSTRUMENT CO., 84 Massachusetts Ave., Cambridge 39, Mass. ADV. PG. Inside Back Cover

Atomlab, Inc., 489 Fifth Ave., New York 17, N. Y.
Avion Instrument Corp., Div. of American Car & Foundry Co., 295 State Highway #17, Paramus, N. J.
Beckman Instruments, Inc., 820 Mission St., South Pasadena 183, Calif.
Belock Instrument Corp., 13–11 111th St., College Point, N. Y.
BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121
Beta Electric Corp., 333 E. 103rd St., New York 29, N. Y.
BEVA LABORATORY, 1640 Olden Ave., Ext., Trenton 9, N. J. ADV. PG. 116
Bogue Electric Mfg. Co., 52 Iowa Ave., Paterson 3, N. J.
Bristol Engineering Corp., Lincoln Ave. & Pond St., Bristol 1, Pa.
Buck Engineering Co., Inc., 37–41 Marcy St., Freehold, N. J.
Burndept Ltd., West St., Erith, Kent, United Kingdom
Cardwell Electronic Productions Corp., Allen D., 97 Whiting St., Plainville, Conn.
Chatham Electronics Corp., Livingston, N. J.
Cinema-Television, Ltd., Worsley Bridge Rd., London, S. E. 26, England
CLEGG LABORATORIES, INC., 142 S. Livingston Ave., Livingston, N. J. ADV. PG. 110
Communication Measurement Labs., Inc., 350 Leland Ave., Plainfield, N. J.
Computing Devices of Canada, Ltd., P .O. Box 508, Ottawa 4, Ontario, Canada
CONSOLIDATED ENGINEERING CORP., 300 N. Sierra Madre Villa, Pasadena 15, Calif. ADV. PG. Inside Front Cover
Daystrom Instrument Co., Archbald, Pa.
DeMornay-Bonardi, Inc., 780 S. Arroyo Parkway, Pasadena, Ca f.
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
Doelcam Corp., 1400 Soldiers Field Rd., Boston 35, Mass.
Douglas Radio Labs., 176 Norfolk Ave., Boston 19, Mass.
DuMont Labs., Inc., Allen B., 760 Bloomfield Ave., Clifton, N. J.
Eastern Precision Resistor Corp., 130–11 90th Ave., Richmond Hill, N. Y
Electrical & Physical Instrument Corp., 42–19 27th St., Long Island City 1, N. Y.
Electrodyne Co., Endicott St., Norwood, Mass.
Electronic Associates, Inc., Long Branch, N. J.
Electronic Research Associates, Inc., 715 Main St., North Caldwell, N. J.
El-Tronics, Inc. 5th & Noble Sts., Philadelphia 23, Pa.
Farrand Optical Co., Inc., Bronx Blvd. at E. 238th St., New York 70, N. Y.
Federal Telephone & Radio Co., A Div. of International Telephone & Telegraph Corp., 100 Kingsland Rd., Clifton, N. J.
Fleming Radio (Developments) Ltd., 18–20 Laystall St., London, E. C. 1, England
Fluke Mfg. Co., Inc., John, 1111 W. Nickerson St., Seattle 99, Wash.
Franklin Electronics, Inc., 415 W. Pike St., Philadelphia 40, Pa.
Freed Transformer Co., Inc., 1736 Weirfield St., Brooklyn 27, N. Y.
FURST ELECTRONICS, INC., 3330-A W. Lawrence Ave., Chicago 25, Ill. ADV. PG. 126
General Magnetics, Inc., 135 Bloomfield Ave., Bloomfield, N. J.
Hanover Developments, 401 E. 74th St., New York 21, N. Y.
Heath Co., Benton Harbor, Mich.
Hewlett-Packard Co., 395 Page Mill Rd., Palo Alto, Calif.
Hycon Mfg. Co., 2961 E. Colorado St., Pasadena 8, Calif.
Industrial Specialties Corp., 323 Atlantic Ave., Brooklyn 1, N. Y.
Inet Div. of Leach Corp., 4441 Santa Fe Ave., Los Angeles 58, Calif.
Infra Electronic Corp., Roseland, N. J.
Insuline Corp. of America, 186 Granite St., Manchester, N. H.
International Research Associates, 2221 Warwick Ave., Santa Monica, Calif.
Jarrell-Ash Co., Farwell St., Newtonville, Mass.
Jobbins Electronic Enterprises, Menlo Park, Calif.
Kahn & Co., Inc., 541 Windsor St., Hartford, Conn.
Kay-Lab, Inc., 1090 Morena Blvd., San Diego 10, Calif.
Keithley Instruments, 3868 Carnegie Ave., Cleveland, Ohio
Kellogg Switchboard & Supply Co., 79 W. Monroe, Chicago 3, Ill.
KEPCO LABS., 131–38 Sanford Ave., Flushing, N. Y. ADV. PG. 25
Krohn-Hite Instrument Co., 580 Massachusetts Ave., Cambridge 39, Mass.
Laboratory for Electronics, Inc., 75 Pitts St., Boston 14, Mass.
Lambda Electronics Corp., 103–02 Northern Blvd., Corona 68, N. Y.
Langevin Mfg. Corp., 37 W. 65th St., New York 23, N. Y.
Lawn Electronics Co., E. Freehold Rd., Freehold, N. J.
LEIGHTON LABS., H. W., 26 Herman St., Glen Ridge, N. J. ADV. PG. 124
Leland Instruments, Ltd., 22–23 Millbank, Westminster, S. W. 1, London, England
Levinthal Electronic Products, 2821 Fair Oaks Ave., Redwood City, Calif.
Macdonald Co., Inc., W. S., 33 University Rd., Cambridge 38, Mass.
MacLeod & Hanopol, Inc., 10 Roland St., Charlestown 29, Mass.
Magnavox Co., Components Div., Fort Wayne 4, Ind.
Magnetic Amplifiers, Inc., 632 Tinton Ave., New York 55, N. Y.
Magnetic Research Corp., 200 E. Center St., El Segundo, Calif.
Magnetics Research Co., 142 King St., Chappaqua, N. Y.
Manson Laboratories, 207 Greenwich Ave., Stamford, Conn.
Matthew Laboratories, 345 Nepperhan Ave., Yonkers 2, N. Y.
Measurement Engineering Ltd., Amprior, Ontario, Canada
Mercury Electronic Co., Box 450, Red Bank, N. J.
Mid-Century Instrumatic Corp., 611 Broadway, New York 12, N. Y.
Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.
Millivac Instruments, 444 Second St., Schenectady, N. Y.
Minnesota Electronics Corp., 1058 University Ave., St. Paul 4, Minn.
Mission-Western Engineers, Inc., 132 W. Colorado, Pasadena 1, Calif.
Moulic Specialties Co., 1005 W. Washington St., Bloomington, Ill.
Noer Corp., 2301 S. Purdue Ave., West Los Angeles, Calif.
NEUTRONIC ASSOCIATES, 87–16 116th St., Richmond Hill, N. Y. ADV. PG. 116
North American Philips Co., Inc., 750 S. Fulton Ave., Mt. Vernon, N. Y.
Northeastern Engineering, Inc., Manchester, N. H.
NUCLEAR SPECIALTY CO., P. O. Box 455, Center Moriches, N. Y. ADV. PG. 134, 138
NUCLEONIC CO. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 112
Opad-Green Co., 71 Warren St., New York, N. Y.
Optical Film Engineering Co., 2731 N. 6th St., Philadelphia 33, Pa.
Oregon Electronic Mfg. Co., 2232 E. Burnside St., Portland 15, Ore.
Ortho Filter Corp., 198 Albion Ave., Paterson 2, N. J.
Paraplegics Mfg. Co., Inc., 10068 Franklin Ave., Franklin Park, Ill.
Perkin Engineering Corp., 345 Kansas St., El Segundo, Calif.
Peschel Electronics, Inc., 13 Garden St., New Rochelle, N. Y.
Plastic Capacitors, Inc., 2511 W. Moffat St., Chicago 47, Ill.
Polarad Electronics Corp., 100 Metropolitan Ave., Brooklyn 11, N. Y.
Polytechnic Research & Development Co., Inc., 202 Tillary St., Brooklyn 1, N. Y.
Power Designs, Inc., 119–22 Atlantic Ave., Richmond Hill 19, N. Y.
Precise Development Corp., 2 Neil Court, Oceanside, N. Y.
Precise Measurements Co., 942 Kings Highway, Brooklyn 23, N. Y.
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
Radiation Instrument Co., P. O. Box 733, Silver Spring, Md.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
Radio Sonic Corp., 32 W. 22nd St., New York 10, N. Y.
RAPID ELECTRIC CO., 2881 Middletown Rd., New York, N. Y. ADV. PG. 124
Raytheon Mfg. Co., Equipment Operations, Waltham 54, Mass.
Red Bank Division, Bendix Aviation Corp., Eatontown, N. J.
Regulator Equipment Corp., 56 California Ave., Paterson 3, N. J.
Resdel Engineering Corp., 2351 Riverside Drive, Los Angeles 39, Calif.
Research Electronics Laboratory, Roslyn, Pa.
Sanders Associates, Inc., Nashua, N. H.
SCIENTIFIC SPECIALTIES CORP., Snow & Union Sts., Brighton 35, Mass. ADV. PG. 138
Servo Corp. of America, 2020 Jericho Turnpike, New Hyde Park, N. Y.
Servo-Tek Products Corp., 1086 Goffle Rd., Hawthorne, N. J.
Sherron Electronics Co., 1201 Flushing Ave., Brooklyn 6, N. Y.
Sorensen & Co., Inc., 375 Fairfield Ave., Stamford, Conn.
Specialized Instruments Corp., Belmont, Calif.
Square Root Mfg. Corp., 391 Saw Mill River Rd., Yonkers, N. Y.
Standard Electronics Research Corp, 2 East End Ave., New York 21, N. Y.
Sunshine Scientific Instrument, 180–12 Grant Ave., Philadelphia 15, Pa.
Superior Electric Co., 83 Laurel St., Bristol, Conn.
TECHNICAL MEASUREMENT CORP., 140–142 State St., New Haven, Conn. ADV. PG. 128
Telechrome, Inc., 88 Merrick Rd., Amityville, N. Y.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Teletronics Laboratory, Inc., Kinkle St., Westbury, N. Y.
Tel-Instrument Co., 728 Garden St., Carlstadt, N. J.
Thordarson-Meissner Mfg. Divs., Mt. Carmel, Ill.
TRACERLAB, INC., 130 High St., Boston, 10, Mass. ADV. PG. 23
Trott Electronics Co., 1944 Clinton Ave., N., Rochester 21, N. Y.
Ultrasonic Corp., 640 Memorial Drive, Cambridge 39, Mass.
United Manufacturing Co., 41 Halg St., Hamden 14, Conn.
Universal Electronics Co., 2012 S. Sepulveda Blvd., Los Angeles 25, Calif.
Varian Associates, 611 Hansen Way, Palo Alto, Calif.
Vibration Research Labs., Inc., 97 Lake Ave., Tuckahoe, N. Y.
Vickers Electric Division, Vickers, Inc., 1840 Locust St., St. Louis 3, Mo.
West Coast Electronics Co., 5873 W. Jefferson, Los Angeles 16, Calif.

PREAMPLIFIERS

Aerovox Corp., 740 Belleville Ave., New Bedford, Mass.
Air Associates, Inc., Teterboro, N. J.
Amplifier Corp. of America, 396 Broadway, New York 13, N. Y.
ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 150
Atlas Coil, Inc., Cottage St., Derby, Conn.
ATOMIC INSTRUMENT CO., 84 Massachusetts Ave., Cambridge 39, Mass. ADV. PG. Inside Back Cover
Atomlab, Inc., 489 Fifth Ave., New York 17, N. Y.
Barker & Williamson, 235 Fairfield Ave., Upper Darby, Pa.
Bell Sound Systems, Inc., 555 Marion Rd., Columbus 7, Ohio
Belock Instrument Corp., 13–11 111th St., College Point, N. Y.
BEVA LABORATORY, 1640 Olden Ave., Ext., Trenton 9, N. J. ADV. PG. 116
Bogen Co., Inc., David, 29 Ninth Ave., New York 14, N. Y.
Brush Electronics Co., 3405 Perkins Ave., Cleveland 14, Ohio
Caltron Co., 1406 S. Hobart Blvd., Los Angeles 6, Calif.
Cardwell Electronic Productions Corp., Allen D., 97 Whiting St., Plainville, Conn.
Cinema Engineering Co., Div. of Aerovox Corp., 1100 Chestnut St., Burbank, Calif.
CLEGG LABORATORIES, INC., 142 S. Livingston Ave., Livingston, N. J. ADV. PG. 110
Collins Radio Co., Cedar Rapids, Iowa
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
Doelcam Corp., 1400 Soldiers Field Rd., Boston 35, Mass.
Douglas Radio Labs., 176 Norfolk Ave., Boston 19, Mass.
EKCO ELECTRONICS LTD., EKCO WORKS, Southend-on-Sea, Essex, England. ADV. PG. 127
Electronic Research Associates, Inc., 715 Main St., North Caldwell, N. J.
Electronic Tube Corp., 1200 E. Mermaid Lane, Philadelphia 18, Pa.
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
Falk & Co., Ltd., M., 5 Victoria St., London S. W. 1, England
Fleming Radio (Developments) Ltd., 18–20 Laystall St., London, E. C. 1, England
Franklin Electronics, Inc., 415 W. Pike St., Philadelphia 40, Pa.
FURST ELECTRONICS, INC., 3330-A W. Lawrence Ave., Chicago 25, Ill. ADV. PG. 126
Hanover Developments, 401 E. 74th St., New York 21, N. Y.
Heath Co., Benton Harbor, Mich.
Hycon Mfg. Co., 2961 E. Colorado St., Pasadena 8, Calif.
Infra Electronic Corp., Roseland, N. J.
Insuline Corp. of America, 186 Granite St., Manchester, N. H.
Interelectronics Corp., 2432 Grand Concourse, New York 58, N. Y.
International Research Associates, 2221 Warwick Ave., Santa Monica, Calif.
Keithley Instruments, 3868 Carnegie Ave., Cleveland, Ohio
Langevin Mfg. Corp., 37 W. 65th St., New York 23, N. Y.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 131
Lesa, Via Bergamo 21, Milan, Italy
Linear Equipment Labs., Inc., Brightwater Place, Massapequa, N. Y.
McIntosh Lab., Inc., 320 Water St., Binghamton, N. Y.
Magnavox Co., Components Div., Fort Wayne 4, Ind.

Magnetic Research Corp., 200 E. Center St., El Segundo, Calif.
Moulic Specialties Co., 1005 W. Washington St., Bloomington, Ill.
Nacr Corp., 2301 S. Purdue Ave., West Los Angeles, Calif.
Newcomb Audio Products Co., 6824 Lexington Ave., Hollywood 38, Calif.
New London Instrument Co., P. O. Box 189, New London, Conn.
Ortho Filter Corp., 198 Albion Ave., Paterson 2, N. J.
Pacific Division, Bendix Aviation Corp., 11600 Sherman Way, North Hollywood, Calif.
Paraplegics Mfg. Co., Inc., 10068 Franklin Ave., Franklin Park, Ill.
Perkin Engineering Corp., 345 Kansas St., El Segundo, Calif.
Plastic Capacitors, Inc., 2511 W. Moffat St., Chicago 47, Ill.
Polytechnic Research & Development Co., Inc., 202 Tillary St., Brooklyn 1, N. Y.
Precise Development Corp., 2 Neil Court, Oceanside, N. Y.
Press Wireless Laboratories, Inc., 25 Prospect Place, West Newton 65, Mass.
Process & Instruments, 15 Stone Ave., Brooklyn 33, N. Y.
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
Radiation Instrument Co., P. O. Box 733, Silver Spring, Md.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
Radio Corporation of America, Engineering Products Div., Camden, N. J.
Rauland-Borg Corp., 3515 W. Addison St., Chicago 18, Ill.
Raytheon Mfg. Co., Equipment Operations, Waltham 54, Mass.
Resdel Engineering Corp., 2351 Riverside Drive, Los Angeles 39, Calif.
Sanborn Co., 39 Osborn St., Cambridge, Mass.
Sanders Associates, Inc., Nashua, N. H.
Servomechanisms, Inc., 500 Franklin Ave., Garden City, N. Y.
Spencer-Kennedy Labs., Inc., 186 Massachusetts Ave., Cambridge 39, Mass.
Square Root Mfg. Corp., 391 Saw Mill River Rd., Yonkers, N. Y.
Standard Electronics Research Corp., 2 East End Ave., New York 21, N. Y.
TECHNICAL MEASUREMENT CORP., 140–142 State St., New Haven, Conn. ADV. PG. 128
Technology Instrument Corp., 531 Main St., Acton, Mass.
Tektronix, Inc., P. O. Box 831, Portland 7, Ore.
Thordarson-Meissner Mfg. Divs., Mt. Carmel, Ill.
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
Ultrasonic Corp., 640 Memorial Drive, Cambridge 39, Mass.
West Coast Electronics Co., 5873 W. Jefferson, Los Angeles 16, Calif.

PRESSES—Laboratory

Carver Inc., Fred S., 1 Chatham Rd., Summit, N. J.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Consolidated Siphon Supply Co., 24 Wooster St., New York, N. Y.
Denison Engineering Co., 1160 Dublin Rd., Columbus 16, Ohio
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Mico Instrument Co., 82 S. Trowbridge St., Cambridge 38, Mass.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

PRESSES—Pelleting

Bausch & Lomb Optical Co., 630 St. Paul St., Rochester 2, N. Y.
Carver Inc., Fred S., 1 Chatham Rd., Summit, N. J.
Denison Engineering Co., 1160 Dublin Rd., Columbus 16, Ohio
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Jarrell-Ash Co., 26 Farwell St., Newtonville, Mass.
Parr Instrument Co., Moline, Ill.
STOKES MACHINE CO., F. J., 5500 Tabor Rd., Philadelphia 20, Pa. ADV. PG. 24

PROJECTORS—Slide

American Optical Co., 28 Mechanic St., Southbridge, Mass.
Bausch & Lomb Optical Co., 630 St. Paul St., Rochester 2, N. Y.
Central Scientific Co., 1700 Irving Park Blvd., Chicago 13, Ill.
Dage Electronics Div., Thompson Products, Inc., 69 N. Second St., Beech Grove, Ind.
Eastman Kodak Co., Rochester 3, N. Y.
Edmund Scientific Co., 502 E. Gloucester Pike, Barrington, N. J.
Jarrell-Ash Co., 26 Farwell St., Newtonville, Mass.

PSYCHROMETERS—Sling

Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Hill & Co., E. Vernon, P. O. Box 189, Lake Geneva, Wis.
Kahl Scientific Instrument Corp., P. O. Box 1166, El Cajon, Calif.
Mine Safety Appliances Co., Braddock, Thomas & Meade Sts., Pittsburgh 8, Pa.
Rascher & Betzold, Inc., 730 N. Franklin St., Chicago 10, Ill.
Taylor Instrument Companies, 95 Ames St., Rochester, N. Y.
WELCH SCIENTIFIC CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148
Weston Electrical Instrument Corp., 614 Frelinghuysen Ave., Newark 5, N. Y.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

PULVERIZERS

Babcock & Wilcox Co., 161 E. 42nd St., New York 17, N. Y.
Central Scientific Co., 1700 Irving Park Blvd., Chicago 13, Ill.
Foster Wheeler Corp., 165 Broadway, New York 6, N. Y.
Miller & Son, Inc., Franklin P., 36 Meadow St., East Orange, N. J.
Pulverizing Machinery Co., 43 Chatham Rd., Summit, N. J.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

PUMPS—Canned-Rotor

Chempump Corp., 1300 E. Mermaid Lane, Philadelphia 18, Pa.
GENERAL ELECTRIC CO., ATOMIC POWER EQUIPMENT COMPONENT, 2900 Campbell Ave., Schenectady 6, N. Y. ADV. PG. 2–6
WESTINGHOUSE ELECTRIC CORP., ATOMIC EQUIPMENT DEPT., Cheswick, Pa. ADV. PG. 145
Worthington Corp., Harrison, N. J.

PUMPS—Centrifugal Vacuum

Ingersoll-Rand Co., 11 Broadway, New York 4, N. Y.
Measurement Engineering Ltd., Amprior, Ontario, Canada
National Research Corp., 160 Charlemont St., Newton Highlands, Mass.
Sethco Mfg. Co., 70–78 Willoughby St., Brooklyn 1, N. Y.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

PUMPS—Coolant, Leak-proof

Aurora Pump Co., 48 Loucks St., Aurora, Ill.
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 10
GENERAL ELECTRIC CO., ATOMIC POWER EQUIPMENT COMPONENT, 2900 Campbell Ave., Schenectady 6, N. Y. ADV. PG. 2–6
Sethco Mfg. Co., 70–78 Willoughby St., Brooklyn 1, N. Y.
Worthington Corp., Harrison, N. J.

PUMPS—Electromagnetic

GENERAL ELECTRIC CO., ATOMIC POWER EQUIPMENT COMPONENT, 2900 Campbell Ave., Schenectady 6, N. Y. ADV. PG. 2–6

PUMPS—Gas-Sealed Sump Type

Aurora Pump Co., 48 Loucks St., Aurora, Ill.

PUMPS—Liquid

Aurora Pump Co., 48 Loucks St., Aurora, Ill.
B-I-F Industries, Inc., P. O. Box 1342, Providence, R. I.
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 10
Consolidated Siphon Supply Co., 24 Wooster St., New York, N. Y.
Eco Engineering Co., 12 New York Ave., Newark 1, N. J.
Ertel Engineering Corp., 8 N. Front St., Kingston, N. Y.
Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago 5, Ill.
Foster Pump Works, Inc., 50 Washington & Front Sts., Brooklyn 1, N. Y.
Foster Wheeler Corp., 165 Broadway, New York 6, N. Y.
General Ceramics & Steatite Corp., 250 Crows Mill Rd., Keasbey, N. J.
GENERAL ELECTRIC CO., ATOMIC POWER EQUIPMENT COMPONENT, 2900 Campbell Ave., Schenectady 6, N. Y. ADV. PG. 2–6
Heinicke Instruments, 2035 Harding St., Hollywood, Fla.
Ingersoll-Rand Co., 11 Broadway, New York 4, N. Y.
KINNEY MFG. DIV., THE NEW YORK AIR BRAKE CO., 3529 Washington St., Boston, Mass. ADV. PG. 103
Lapp Insulator Co., Inc., 31 Gilbert St., LeRoy, N. Y.
Meditronic Instruments, 4867 Fountain Ave., Hollywood 29, Calif.
Proportioneers, Inc., Div. of B-I-F Industries, Inc., 530 Harris Ave., Providence, 1, R. I.
Robbins & Myers, Inc., 1345 Lagonda Ave., Springfield, Ohio
Roy Co., Milton, 1300 E. Mermaid Lane, Philadelphia 18, Pa.
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
Sethco Mfg. Co., 70–78 Willoughby St., Brooklyn 1, N. Y.
Shriver & Co., Inc., 808 Hamilton St., Harrison, N. J.
Sigmamotor, Inc., 500 N. Main St., Middleport, N. Y.
Union Steam Pump Co., Battle Creek, Mich.
Vanton Pump & Equipment Corp., 350 Fifth Ave., New York 1, N. Y.
Worthington Corp., Harrison, N. J.

PUMPS—Liquid Metal

Allis-Chalmers Mfg. Co., 935 S. 70th St., Milwaukee 1, Wis.
Callery Chemical Co., Callery, Pa.
Mine Safety Appliances Co., Braddock, Thomas & Meade Sts., Pittsburgh 8, Pa.

PUMPS—Metering

B-I-F Industries, Inc., P. O. Box 1342, Providence, R. I.
Central Scientific Co., 1700 Irving Park Blvd., Chicago 13, Ill.
Eco Engineering Co., 12 New York Ave., Newark 1, N. J.
Lapp Insulator Co., Inc., 31 Gilbert St., LeRoy, N. Y.
Meditronic Instruments, 4867 Fountain Ave., Hollywood 29, Calif.
Robbins & Myers, Inc., 1345 Lagonda Ave., Springfield, Ohio
Roy Co., Milton, 1300 E. Mermaid Lane, Philadelphia 8, Pa.
Sigmamotor, Inc., 500 N. Main St., Middleport, N. Y.

PUMPS—Pack-Sealed

Aurora Pump Co., 48 Loucks St., Aurora, Ill.
Ingersoll-Rand Co., 11 Broadway, New York 4, N. Y.
Robbins & Myers, Inc., 1345 Lagonda Ave., Springfield, Ohio
Sethco Mfg. Co., 70–78 Willoughby St., Brooklyn 1, N. Y.

PUMPS—Vacuum

Ace Glass, Inc., Vineland, N. J.
BEACH-RUSS CO., 50 Church St., New York 7, N. Y. .DV. PG. 104
Biddle Co., James G., 1316 Arch St., Philadelphia 7, Pa.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Consolidated Vacuum Corp., 1775 Mt. Read Blvd., Rochester 3, N. Y.
Daylite Vacuum Products Co., 5207 N. Milwaukee Ave., Chicago 30, Ill.
Eclipse-Pioneer Div., Bendix Aviation Corp., Teterboro, N. J.
Eisler Engineering Co., 760 S. 13th St., Newark 3, N. J.
Eitel-McCullough, Inc., San Bruno, Calif.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Foster Pump Works, Inc., 50 Washington & Front Sts., Brooklyn 1, N. Y.
Foster Wheeler Corp., 165 Broadway, New York 6, N. Y.
Fredericks Co., George E., Bethayres, Pa.
Gast Mfg. Corp., 137 Hinkley St., Benton Harbor, Mich.
High Vacuum Equipment Corp., 349 Lincoln St., Hingham, Mass.
HIGH VOLTAGE ENGINEERING CORP., 7 University Rd., Cambridge 38, Mass. ADV. PG. 15
Ingersoll-Rand Co., 11 Broadway, New York 4, N. Y.
International Pump & Machine Works, 11–13 Governor St., Newark 2, N. J.
Kahl Scientific Instrument Corp., P. O. Box 1166, El Cajon, Calif.
Kahle Engineering Co., 1307 Seventh St., North Bergen, N. J.
KINNEY MFG. DIV., THE NEW YORK AIR BRAKE CO., 3529 Washington St., Boston, Mass. ADV. PG. 103

LERMAC INC., 5303 Adeline St., Oakland, Calif. ADV. PG. 114
Measurement Engineering Ltd., Amprior, Ontario, Canada
National Research Corp., 160 Charlemont St., Newton Highlands, Mass.
Optical Film Engineering Co., 2731 N. 6th St., Philadelphia 33, Pa.
Phillips-Drucker, 2245 S. Vandeventer Ave., St. Louis, Mo.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
SCIENTIFIC SPECIALTIES CORP., Snow & Union Sts., Brighton 35, Mass. ADV. PG. 138
STOKES MACHINE CO., F. J., 5500 Tabor Rd., Philadelphia 20, Pa. ADV. PG. 24
Vacuum Tube Products, 506 S. Cleveland St., Oceanside, Calif.
Wakefield Industries, Inc., 5108 Grove St., Skokie, Ill.
WELCH SCIENTIFIC CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148
Whittington Pump & Engineering Corp., 1126 Prospect St., Indianapolis 3, Ind.
Worthington Corp., Harrison, N. J.

PURIFIERS—Air

Air Conversion Research Corp., 4107 N. Damen Ave., Chicago 18, Ill.
Bullard Co., E. D., 275 Eighth St., San Francisco 3, Calif.
DeVilbiss Co., 300 Phillips Ave., Toledo, Ohio
Selhco Mfg. Co., 70–78 Willoughby St., Brooklyn 1, N. Y.

PURIFIERS—Water

See WATER CONDITIONERS

PYROMETERS

Assembly Products, Inc., Chagrin Falls 6, Ohio
Bristol Co., Waterbury 20, Conn.
CAMBRIDGE INSTRUMENT CO., INC., Grand Central Terminal, New York 17, N. Y. ADV. PG. 136
Engelhard, Inc., Charles, 850 Passaic St., East Newark, N. J.
Ess Instrument Co., 98 S. Washington Ave., Bergenfield, N. J.
Fielden Instrument Div., Robertshaw-Fulton Controls Co., 2920 N. 4th St., Philadelphia 33, Pa.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
J-B-T Instruments, Inc., 441 Chapel St., New Haven 8, Conn.
Larson Instrument Co., 24 Orchard St., Tarrytown, N. Y.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 131
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Meters, Inc., 5353 N. Keystone Ave., Indianapolis 20, Ind.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Back Cover
Photoswitch Div., Electronic Corp. of America, 77 Broadway, Cambridge 42, Mass.
Pyrometer Instrument Co., Inc., Bergenfield, N. J.
Richards Co., Inc., Arklay S., 12 Winchester St., Newton Highlands 61, Mass.
SCIENTIFIC SPECIALTIES CORP., Snow & Union Sts., Brighton 35, Mass. ADV. PG. 138
Sensitive Research Instrument Corp., 9 Elm Ave., Mt. Vernon, N. Y.
Thermo Electric Mfg. Co., 465 Huff, Dubuque, Ia.
Thwing-Albert Instrument Co., Penn St. & Pulaski Ave., Philadelphia 44, Pa.
WELCH SCIENTIFIC CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148
West Instrument Corp., 525 N. Noble St., Chicago 22, Ill.
Weston Electrical Instrument Corp., 614 Frelinghuysen Ave., Newark 5, N. J.
Wheelco Instruments Div., Barber-Colman Co., Rockford, Ill.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

QUARTZ—Fused

Ace Glass, Inc., Vineland, N. J.
Amersil Co., Inc., 683 Ramsey Ave., Hillside, N. J.
Baker & Co., Inc., 113 Astor St., Newark 5, N. J.
Beckman, Inc., Arnold O., 1020 Mission St., South Pasadena, Calif.
Cooper-Hewitt Electric Co., 721 Grand St., Hoboken, N. J.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 106
Dallons Laboratories, Inc., 5066 Santa Monica Blvd., Los Angeles, Calif.
Fish-Schurman Corp., 70 Portman Rd., New Rochelle, N. Y.
General Electric Co., 1133 E. 152nd St., Cleveland, Ohio
LERMAC INC., 5303 Adeline St., Oakland, Calif. ADV. PG. 114
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
Syncor Products Co., Malden, Mass.
Thermal American Fused Quartz Co., Inc., 18–20 Salem St., Dover, N. J.
Wakefield Industries, Inc., 5108 Grove St., Skokie, Ill.

RADIATION SOURCES

See ISOTOPES—Radioactive
NEUTRON SOURCES

RADIOGRAPHIC EQUIPMENT—Gamma Ray

AMERAY CORP., Route #46, Kenvil, N. J. ADV. PG. 123
Atomic Energy of Canada, Ltd., Commercial Products Div., P. O. Box 93, Ottawa, Ontario, Canada
Barnes Co., W. F. & John, 201 S. Water St., Rockford, Ill.
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 10
Bio-Rad Laboratories, 800 Delaware St., Berkeley, Calif.
CANADIAN RADIUM & URANIUM CORP., 630 Fifth Ave., New York 20, N. Y. ADV. PG. 133
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
Falk & Co., Ltd., M., 5 Victoria St., London, S. W. 1, England
Isotope Products Ltd., Davis Rd., Oakville, Ontario, Canada
JORDAN ELECTRONIC MFG. CO., INC., Union Bldg., 119 E. Union St., Pasadena 1, Calif. ADV. PG. 129, 136
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
Nuclear Research Corp., Southampton, Pa.
Pantatron Ltd., Teleflex Works, High Rd., Chadwell Heath, Essex, England
Picker X-Ray Corp., 25 S. Broadway, White Plains, N. Y.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
Radioactive Products Inc., 540 W. Congress St., Detroit 26, Mich.
Radium Chemical Co., 161 E. 42nd St., New York 17, N. Y.
St. John X-Ray Laboratory, Califon, N. J.
Technical Operations, Inc., 6 Schouler Court, Arlington 74, Mass.
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
Western Radiation Lab., 1107 W. 24th St., Los Angeles 7, Calif.

RADIOGRAPHIC EQUIPMENT—X-Ray

Bio-Rad Laboratories, 800 Delaware St., Berkeley, Calif.
Bracke-Seib X-Ray Co., Inc., 293 Third Ave., New York 10, N. Y.
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
Harshaw Scientific Div. of Harshaw Chemical Co., 1945 E. 97th St., Cleveland 6, Ohio
HIGH VOLTAGE ENGINEERING CORP., 7 University Rd., Cambridge 38, Mass. ADV. PG. 15
JORDAN ELECTRONIC MFG. CO., INC., Union Bldg., 119 E. Union St., Pasadena 1, Calif. ADV. PG. 129, 136
North American Philips Co., Inc., 750 S. Fulton Ave., Mt. Vernon, N. Y.
Picker X-Ray Corp., 25 S. Broadway, White Plains, N. Y.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
St. John X-Ray Laboratory, Califon, N. J.
X-Ray Department of General Electric Co., 4855 Electric Ave., Milwaukee 1, Wis.

REACTORS—Nuclear, Package Power

American Machine & Foundry Co., Atomic Energy Dept., 261 Madison Ave., New York 16, N. Y.
Babcock & Wilcox Co., 161 E. 42nd St., New York 17, N. Y.
FORD INSTRUMENT CO., DIV. OF SPERRY CORP., 31–10 Thomson Ave., Long Island City, N. Y. ADV. PG. 105
Foster Wheeler Corp., 165 Broadway, New York 6, N. Y.
GENERAL ELECTRIC CO., ATOMIC POWER EQUIPMENT COMPONENT, 2900 Campbell Ave., Schenectady 6, N. Y. ADV. PG. 2–6
Kidde Nuclear Laboratories Inc., Walter, 975 Stewart Ave., Garden City, N. Y.
North American Aviation, Inc., Nuclear Engineering & Manufacturing, P. O. Box 309, Downey, Calif.
NUCLEAR DEVELOPMENT ASSOCIATES, INC., 80 Grand St., White Plains, N. Y. ADV. PG. 102
Vitro Corp. of America, 233 Broadway, New York 7, N. Y.

REACTORS—Nuclear, Power

American Machine & Foundry Co., Atomic Energy Dept., 261 Madison Ave., New York 16, N. Y.
Babcock & Wilcox Co., 161 E. 42nd St., New York 17, N. Y.
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
FORD INSTRUMENT CO., DIV. OF SPERRY CORP., 31–10 Thomson Ave., Long Island City, N. Y. ADV. PG. 105
Foster Wheeler Corp., 165 Broadway, New York 6, N. Y.
GENERAL ELECTRIC CO., ATOMIC POWER EQUIPMENT COMPONENT, 2900 Campbell Ave., Schenectady 6, N. Y. ADV. PG. 2–6
Kidde Nuclear Laboratories Inc., Walter, 975 Stewart Ave., Garden City, N. Y.
North American Aviation, Inc., Nuclear Engineering & Manufacturing, P. O. Box 309, Downey, Calif.
NUCLEAR DEVELOPMENT ASSOCIATES, INC., 80 Grand St., White Plains, N. Y. ADV. PG. 102
Vitro Corp. of America, 233 Broadway, New York 7, N. Y.

REACTORS—Nuclear, Research

American Machine & Foundry Co., Atomic Energy Dept., 261 Madison Ave., New York 16, N. Y.
Babcock & Wilcox Co., 161 E. 42nd St., New York 17, N. Y.
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
FORD INSTRUMENT CO., DIV. OF SPERRY CORP., 31–10 Thomson Ave., Long Island City, N. Y. ADV. PG. 105
Foster Wheeler Corp., 165 Broadway, New York 6, N. Y.
GENERAL ELECTRIC CO., ATOMIC POWER EQUIPMENT COMPONENT, 2900 Campbell Ave., Schenectady 6, N. Y. ADV. PG. 2–6
Kidde Nuclear Laboratories, Inc., Walter, 975 Stewart Ave., Garden City, N. Y.
North American Aviation, Inc., Nuclear Engineering & Manufacturing, P. O. Box 309, Downey, Calif.
NUCLEAR DEVELOPMENT ASSOCIATES, INC., 80 Grand St., White Plains, N. Y. ADV. PG. 102
Sylvania Electric Products, Inc., 1740 Broadway, New York 19, N. Y.
Vitro Corp. of America, 233 Broadway, New York 7, N. Y.

RECORDERS

See also CONTROLS

RECORDERS—Fluid Flow

Automatic Temperature Control Co., Inc., 5206 Pulaski Ave., Philadelphia 44, Pa.
BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121
B-I-F Industries, Inc., P. O. Box 1342, Providence, R. I.
Bristol Co., Waterbury 20, Conn.
Builders-Providence, Inc., Div. of B-I-F Industries, Inc., 530 Harris Ave., Providence 1, R. I.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
General Controls Co., Glendale 1, Calif.
Hagan Corp., 323 Fourth Ave., Pittsburgh 22, Pa.
Johnson Service Co., 507 E. Michigan St., Milwaukee 2, Wis.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Back Cover
Nuclear Research Corp., Southampton, Pa.
Potter Instrument Co., 115 Cutter Mill Rd., Great Neck, N. Y.
Swartwout Co., 18547 Euclid Ave., Cleveland, Ohio
Taller & Cooper Inc., 75 Front St., Brooklyn, N. Y.
Taylor Instrument Companies, 95 Ames St., Rochester, N. Y.
U. S. Gauge Div., American Machine and Metals, Inc., Sellersville, Pa.

RECORDERS—Graphic

Alden Electronics & Impulse Recording Equipment Co., Westboro, Mass.
Alfax Paper & Engineering Co., P. O. Box 125, Westboro, Mass.
Automatic Temperature Control Co., Inc., 5206 Pulaski Ave., Philadelphia 44, Pa.
Barnes Development Co., 213 W. Baltimore Pike, Lansdowne, Pa.
Bristol Co., Waterbury 20, Conn.
Brush Electronics Co., 3405 Perkins Ave., Cleveland 14, Ohio
Edin Co., Inc., 207 Main St., Worcester, Mass.
Electronic Associates, Inc., Long Branch, N. J.
Esterline-Angus Co., Inc., P. O. Box 596, Indianapolis 6, Ind.
Ferranti Electric, Inc., 30 Rockefeller Plaza, New York 20, N. Y.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.

General Controls Co., Glendale 1, Calif.
Giannini & Co., G. M., Pasadena 1, Calif.
Goldak Co., 1544 W. Glenoaks Blvd., Glendale 1, Calif.
Goodyear Aircraft Corp., 1210 Massillion Rd., Akron 15, Ohio
Hagan Corp., 323 Fourth Ave., Pittsburgh 22, Pa.
Hathaway Instrument Co., 1315 S. Clarkson St., Denver 10, Colo.
Hogan Laboratories, Inc., 155 Perry St., New York 14, N. Y.
L & O Research & Development Corp., 134 N. Wayne Ave., Wayne, Pa.
Larson Instrument Co., 24 Orchard St., Tarrytown, N. Y.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 131
Librascope, Inc., 808 Western Ave., Glendale, Calif.
Link Aviation, Inc., Binghamton, N. Y.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Matthew Laboratories, 345 Nepperhan Ave., Yonkers 2, N. Y.
Mid-Century Instrumatic Corp., 611 Broadway, New York 12, N. Y.
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
Offner Electronics, Inc., 5320 N. Kedzie Ave., Chicago 25, Ill
Photron Instrument Co., 6516 Detroit Ave., Cleveland 2, Ohio
Precise Measurements Co., 942 Kings Highway, Brooklyn 23, N. Y.
Sanborn Co., 39 Osborn St., Cambridge, Mass.
Sangamo Electric Co., Springfield, Ill.
Sound Apparatus Co., Stirling, N. J.
Taller & Cooper Inc., 75 Front St., Brooklyn, N. Y.
Taylor Instrument Companies, 95 Ames St., Rochester, N. Y.
Texas Instruments, Inc., 6000 Lemmon Ave., Dallas 9, Texas
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.

RECORDERS—High Speed Digital

Ampex Corp., 934 Charter St., Redwood City, Calif.
ATOMIC INSTRUMENT CO., 84 Massachusetts Ave., Cambridge 39, Mass. ADV. PG. Inside Back Cover
Avion Instrument Corp., Div. of American Car & Foundry Co., 295 State Highway #17, Paramus, N. J.
BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121
Brush Electronics Co., 3405 Perkins Ave., Cleveland 14, Ohio
Chatham Electronics Corp., Livingston, N. J.
Clary Multiplier Corp., 408 Junipero St., San Gabriel, Calif.
Cubic Corp., 2841 Canon St., San Diego 6, Calif.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Kellogg Switchboard & Supply Co., 79 W. Monroe, Chicago 3, Ill.
Magnavox Co., Components Div., Fort Wayne 4, Ind.
Potter Instrument Co., 115 Cutter Mill Rd., Great Neck, N. Y.
Remington Rand Inc., Engineering Research Associates Div., 1902 W. Minnehaha Ave., St. Paul W4, Minn.
Streeter-Amet Co., 4101 Ravenswood Ave., Chicago 13, Ill.
Taller & Cooper Inc., 75 Front St., Brooklyn, N. Y.
Telecomputing Corp., 133 E. Santa Anita Ave., Burbank, Calif.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Ultrasonic Corp., 640 Memorial Drive, Cambridge 39, Mass.
Wang Laboratories, 37 Hurley St., Cambridge 41, Mass.

RECORDERS—Humidity & Temperature

American Instrument Co., Inc., 8030 Georgia Ave., Silver Spring, Md.
Bristol Co., Waterbury 20, Conn.
Cardwell Electronic Productions Corp., Allen D., 97 Whiting St., Plainville, Conn.
Fielden Instrument Div., Robertshaw-Fulton Controls Co., 2920 N. 4th St., Philadelphia 33, Pa.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Friez Instrument Div. of Bendix Aviation Corp., 1454 Taylor Ave., Baltimore 4, Md.
General Controls Co., Glendale 1, Calif.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Hays Corp., Michigan City, Ind.
Johnson Service Co., 507 E. Michigan St., Milwaukee 2, Wis.
Kahl Scientific Instrument Corp., P. O. Box 1166, El Cajon, Calif.
L & O Research & Development Corp., 134 N. Wayne Ave., Wayne, Pa.
Larson Instrument Co., 24 Orchard St., Tarrytown, N. Y.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 131
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave. S., Minneapolis, Minn.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Back Cover
Moeller Instrument Co., 132nd St. & 89th Ave., Richmond Hill 18, N. Y.
Partlow Corp., 2 Campion Rd., New Hartford, N. Y.
Powers Regulator Co., The, 3400 Oakton, Skokie, Ill.
Serdex, Inc., 91 Cambridge St., Boston, Mass.
Streeter-Amet Co., 4101 Ravenswood Ave., Chicago 13, Ill.
Taller & Cooper Inc., 75 Front St., Brooklyn, N. Y.
Taylor Instrument Companies, 95 Ames St., Rochester, N. Y.
Thwing-Albert Instrument Co., Penn St. & Pulaski Ave., Philadelphia 44, Pa.
U. S. Gauge Div., American Machine and Metals, Inc., Sellersville, Pa.
Weksler Thermometer Corp., Martinique Bldg., 49 W. 32nd St., New York 1, N. Y.
West Instrument Corp., 525 N. Noble St., Chicago 22, Ill.
Weston Electrical Instrument Corp., 614 Frelinghuysen Ave., Newark 5, N. J.
Wheelco Instruments Div., Barber-Colman Co., Rockford, Ill.

RECORDERS—Line

Esterline-Angus Co., Inc., P. O. Box 596, Indianapolis 6, Ind.
Fielden Instrument Div., Robertshaw-Fulton Controls Co., 2920 N. 4th St., Philadelphia 33, Pa.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
L & O Research & Development Corp., 134 N. Wayne Ave., Wayne, Pa.
Larson Instrument Co., 24 Orchard St., Tarrytown, N. Y.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 131
SCIENTIFIC SPECIALTIES CORP., Snow & Union Sts., Brighton 35, Mass. ADV. PG. 138
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.

RECORDERS—Liquid Level

Automatic Temperature Control Co., Inc., 5206 Pulaski Ave., Philadelphia 44, Pa.
B-I-F Industries, Inc., P. O. Box 1342, Providence, R. I.
BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121
Bogue Electric Mfg. Co., 52 Iowa Ave., Paterson 3, N. J.
Bristol Co., Waterbury 20, Conn.
Builders-Providence, Inc., Div. of B-I-F Industries, Inc., 530 Harris Ave., Providence 1, R. I.
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
Fielden Instrument Div., Robertshaw-Fulton Controls Co., 2920 N. 4th St., Philadelphia 33, Pa.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
General Controls Co., Glendale 1, Calif.
Hagan Corp., 323 Fourth Ave., Pittsburgh 22, Pa.
Hays Corp., Michigan City, Ind.
Larson Instrument Co., 24 Orchard St., Tarrytown, N. Y.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 131
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave. S., Minneapolis, Minn.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Back Cover
Nuclear Research Corp., Southampton, Pa.
Ohmart Corp., 2236 Bogen St., P. O. Box 67, Sta. B, Cincinnati 22, Ohio
Simplex Valve & Meter Co., 68th & Upland Sts., Philadelphia 42, Pa.
Swartwout Co., 18547 Euclid Ave., Cleveland, Ohio
Taller & Cooper Inc., 75 Front St., Brooklyn, N. Y.
Taylor Instrument Companies, 95 Ames St., Rochester, N. Y.
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
U. S. Gauge Div., American Machine and Metals, Inc., Sellersville, Pa.

RECORDERS—Milliammeter & Millivoltmeter

Bristol Co., Waterbury 20, Conn.
Dalmo Victor Co., 1414 El Camino Real, San Carlos, Calif.
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
Doelcam Corp., 1400 Soldiers Field Rd., Boston 35, Mass.
Esterline-Angus Co., Inc., P. O. Box 596, Indianapolis 6, Ind.
Fielden Instrument Div., Robertshaw-Fulton Controls Co., 2920 N. 4th St., Philadelphia 33, Pa.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Hagan Corp., 323 Fourth Ave., Pittsburgh 22, Pa.
Hathaway Instrument Co., 1315 S. Clarkson St., Denver 10, Colo.
Infra Electronic Corp., Roseland, N. J.
Larson Instrument Co., 24 Orchard St., Tarrytown, N. Y.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 131
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Measurement Engineering Ltd., Amprior, Ontario, Canada
Millivac Instruments, 444 Second St., Schenectady, N. Y.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Back Cover
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
NUCLEAR INSTRUMENT & CHEMICAL CORP., 229 W. Erie St., Chicago 10, Ill. ADV. PG. 137
Precise Measurements Co., 942 Kings Highway, Brooklyn 23, N. Y.
Sanborn Co., 39 Osborn St., Cambridge, Mass.
Swartwout Co., 18547 Euclid Ave., Cleveland, Ohio
Texas Instruments, Inc., 6000 Lemmon Ave., Dallas 9, Texas
Thwing-Albert Instrument Co., Penn St. & Pulaski Ave., Philadelphia 44, Pa.
Wallace & Tiernan Inc., Belleville 9, N. J.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.
Weston Electrical Instrument Corp., 614 Frelinghuysen Ave., Newark 5, N. J.
Wheelco Instruments Div., Barber-Colman Co., Rockford, Ill.

RECORDERS—Nuclear Radiation

See COUNTERS; SCALERS, etc.

RECORDERS—Potentiometer

Bristol Co., Waterbury 20, Conn.
Electronic Associates, Inc., Long Branch, N. J.
Fielden Instrument Div., Robertshaw-Fulton Controls Co., 2920 N. 4th St., Philadelphia 33, Pa.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Goldak Co., 1544 W. Glenoaks Blvd., Glendale 1, Calif.
Infra Electronic Corp., Roseland, N. J.
L & O Research & Development Corp., 134 N. Wayne Ave., Wayne, Pa.
Larson Instrument Co., 24 Orchard St., Tarrytown, N. Y.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 131
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Back Cover
Precise Measurements Co., 942 Kings Highway, Brooklyn 23, N. Y.
Sound Apparatus Co., Stirling, N. J.
Swartwout Co., 18547 Euclid Ave., Cleveland, Ohio
Taller & Cooper Inc., 75 Front St., Brooklyn, N. Y.
Thwing-Albert Instrument Co., Penn St. & Pulaski Ave., Philadelphia 44, Pa.
West Instrument Corp., 525 N. Noble St., Chicago 22, Ill.
Weston Electrical Instrument Corp., 614 Frelinghuysen Ave., Newark 5, N. J.

RECORDERS—Telemetering

Air Associates, Inc., Teterboro, N. J.
Ampex Corp., 934 Charter St., Redwood City, Calif.
B-I-F Industries, Inc., P. O. Box 1342, Providence, R. I.
BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121
Bristol Co., Waterbury 20, Conn.
Builders-Providence, Inc., Div. of B-I-F Industries, Inc., 530 Harris Ave., Providence 1, R. I.
Century Geophysical Corp., P. O. Box 6216, Pine Station, Tulsa, Okla.
Cinema-Television Ltd., Worsley Bridge Rd., London, S. E. 26, England
CONSOLIDATED ENGINEERING CORP., 300 N. Sierra Madre Villa, Pasadena 15, Calif. ADV. PG. Inside Front Cover
Electrodyne Co., Endicott St., Norwood, Mass.
Esterline-Angus Co., Inc., P. O. Box 596, Indianapolis 6, Ind.
Fairchild Recording Equipment Corp., 154th St. & 7th Ave., Whitestone, N. Y.
Fielden Instrument Div., Robertshaw-Fulton Controls Co., 2920 N. 4th St., Philadelphia 33, Pa.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6

Hagan Corp., 323 Fourth Ave., Pittsburgh 22, Pa.
Infra Electronic Corp., Roseland, N. J.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 131
Manning, Maxwell & Moore, Inc., Stratford, Conn.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Back Cover
Northeastern Engineering, Inc., Manchester, N. H.
Pacific Division, Bendix Aviation Corp., 11600 Sherman Way, North Hollywood, Calif.
Potter Instrument Co., 115 Cutter Mill Rd., Great Neck, N. Y.
Simplex Valve & Meter Co., 68th & Upland Sts., Philadelphia 42, Pa.
Streeter-Amet Co., 4101 Ravenswood Ave., Chicago 13, Ill.
Taller & Cooper Inc., 75 Front St., Brooklyn, N. Y.
Telecomputing Corp., 133 E. Santa Anita Ave., Burbank, Calif.
Times Facsimile Corp., 540 W. 58th St., New York 19, N. Y.
Ultrasonic Corp., 640 Memorial Drive, Cambridge 39, Mass.
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 107
Wheelco Instruments Div., Barber-Colman Co., Rockford, Ill.

RECTIFIERS—Electronic

Air Associates, Inc., Teterboro, N. J.
Bogue Electric Mfg. Co., 52 Iowa Ave., Paterson 3, N. J.
Chatham Electronics Corp., Livingston, N. J.
Connecticut Telephone & Electric Corp., 70 Brittania St., Meriden, Conn.
Electronic Associates, Inc., Long Branch, N. J.
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Inet Div. of Leach Corp., 4441 Santa Fe Ave., Los Angeles 58, Calif.
Infra Electronic Corp., Roseland, N. J.
Insuline Corp. of America, 186 Granite St., Manchester, N. H.
International Rectifier Corp., 1521 E. Grand Ave., El Segundo, Calif.
Magnatran, Inc., 246 Schuyler Ave., Kearny, N. J.
Mellaphone Corp., Rochester 2, N. Y.
Moulic Specialties Co., 1005 W. Washington St., Bloomington, Ill.
Opad-Green Co., 71 Warren St., New York, N. Y.
Power Designs, Inc., 119–22 Atlantic Ave., Richmond Hill 19, N. Y.
Power Transformer Co., Inc., 532 Mulberry St., Newark 5, N. J.
Pyramid Electric Co., 1445 Hudson Blvd., North Bergen, N. J.
Radio Corporation of America, Engineering Products Div., Camden, N. J.
Sanders Associates, Inc., Nashua, N. H.
Servo-Tek Products Corp., 1086 Goffle Rd., Hawthorne, N. J.
Sorensen & Co., Inc., 375 Fairfield Ave., Stamford, Conn.
Sylvania Electric Products, Inc., 1740 Broadway, New York 19, N. Y.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Ther Electric & Machine Works, 15 S. Jefferson St., Chicago 6, Ill.
Thordarson-Meissner Mfg. Divs., Mt. Carmel, Ill.
Varo Mfg. Co., Inc., 1801 Walnut St., Garland, Texas
Weltronic Co., 19500 W. Eight Mile Rd., Detroit 19, Mich.
Western Sound & Electric Labs., Inc., 805 S. Fifth St., Milwaukee 4, Wis.

RECTIFIERS—Metallic

American Television & Radio Co., 300 E. Fourth St., St. Paul 1, Minn.
Berkshire Laboratories, 588 Beaver Pond Rd., Lincoln, Mass.
Bogue Electric Mfg. Co., 52 Iowa Ave., Paterson 3, N. J.
Bradley Labs., Inc., 168 Columbus Ave., New Haven 10, Conn.
Electrical Facilities, Inc., 4224 Holden St., Oakland 8, Calif.
Fansteel Metallurgical Corp., North Chicago, Ill.
Federal Telephone & Radio Co., A Div. of International Telephone & Telegraph Corp., 100 Kingsland Rd., Clifton, N. J.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Industrial Specialties Corp., 323 Atlantic Ave., Brooklyn 1, N. Y.
Inet Div. of Leach Corp., 4441 Santa Fe Ave., Los Angeles 58, Calif.
International Rectifier Corp., 1521 E. Grand Ave., El Segundo, Calif.
INTERNATIONAL RESISTANCE CO., 401 N. Broad St., Philadelphia 8, Pa. ADV. PG. 7
Magnetic Research Corp., 200 E. Center St., El Segundo, Calif.
Mellaphone Corp., Rochester 2, N. Y.
Model Rectifier Corp., 557 Rogers Ave., Brooklyn 25, N. Y.
Opad-Green Co., 71 Warren St., New York, N. Y.
Power Transformer Co., Inc., 532 Mulberry St., Newark 5, N. J.
Radio Receptor Co., Inc., 251 W. 19th St., New York 11, N. Y.
RAPID ELECTRIC CO., 2881 Middletown Rd., New York, N. Y. ADV. PG. 124
Sanford Miller Co., 691 Bedford Ave., Brooklyn 6, N. Y.
Sangamo Electric Co., Springfield, Ill.
Sarkes Tarzian, Inc., 415 N. College Ave., Bloomington, Ind.
Syntron Corp., 355 Lexington, Homer City, Pa.
Ther Electric & Machine Works, 15 S. Jefferson St., Chicago 6, Ill.
United Chromium, Incorporated, 100 E. 42nd St., New York, N. Y.
Vickers Electric Division, Vickers, Inc., 1840 Locust St., St. Louis 3, Mo.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.

REFERENCE SOURCES & STANDARDS Radioactive

Atomic Energy of Canada, Ltd., Commercial Products Div., P. O. Box 93, Ottawa, Ontario, Canada
ATOMIC INSTRUMENT CO., 84 Massachusetts Ave., Cambridge 39, Mass. ADV. PG. Inside Back Cover
ATOMIC RESEARCH LABORATORY, 2633 Santa Monica Blvd., Santa Monica, Calif. ADV. PG. 142
Bio-Rad Laboratories, 800 Delaware St., Berkeley, Calif.
Clark Instruments, Div. of National Electrical Machine Shops, Inc., 919 Jesup-Blair Drive, Silver Spring, Md.
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
Isotope Specialties Co., 3816 San Fernando Rd., Glendale, Calif.
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
Radium Chemical Co., 161 E. 42nd St., New York 17, N. Y.
Radioactive Products, Inc., 540 W. Congress St., Detroit 26, Mich.
Technical Operations, Inc., 6 Schouler Court, Arlington 74, Mass.
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
U. S. RADIUM CORP., 535 Pearl St., New York 7, N. Y. ADV. PG. 108

REFRACTOMETERS

American Optical Co., Instrument Div., Buffalo 15, N. Y.
Bausch & Lomb Optical Co., 630 St. Paul St., Rochester 2, N. Y.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Gaertner Scientific Corp., 1237 Wrightwood Ave., Chicago, Ill.
Harris, Inc., 61 S. E. Yamhill, Portland, Ore.
Jarrell-Ash Co., 26 Farwell St., Newtonville, Mass.
Phoenix Precision Instrument Co., 3803–05 North 5th St., Philadelphia, Pa.
Sobotka Co., Eric, 104 W. 42nd St., New York, N. Y.

REFRIGERATION EQUIPMENT

Aireco Inc., 2315 Second Ave., Carmen, Schenectady, N. Y.
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 10
Bowser Technical Refrigeration Div. of Bowser, Inc., Terryville, Conn.
Foster Wheeler Corp., 165 Broadway, New York 6, N. Y.
Hudson Bay Division, Refrigeration Systems, Inc., 646 W. Washington Blvd., Chicago, Ill.
Imhof Ltd., Alfred, 112 New Oxford St., London, W. C. 1, England
Little, Inc., Arthur D., Acorn Lane, Cambridge 42, Mass.
Metalab Equipment Corp., 270 Duffy Ave., Hicksville, N. Y.
SCIENTIFIC SPECIALTIES CORP., Snow & Union Sts., Brighton 35, Mass. ADV. PG. 138
Sherer-Gillett Co., Marshall, Mich.
Sorvall, Inc., Ivan, P. O. Box 230, Pearl St., Norwalk, Conn.
Tenney Engineering, Inc., 1090 Springfield Rd., Union, N. J.
Trane Company, The, La Crosse, Wis.
Ultrasonic Corp., 640 Memorial Drive, Cambridge 39, Mass.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.
Worthington Corp., Harrison, N. J.

REGISTERS—Electromechanical

ATOMIC INSTRUMENT CO., 84 Massachusetts Ave., Cambridge 39, Mass. ADV. PG. Inside Back Cover
Clary Multiplier Corp., 408 Junipero St., San Gabriel, Calif.
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
Ultrasonic Corp., 640 Memorial Drive, Cambridge 39, Mass.
Veeder-Root, Inc., 20 Sargeant St., Hartford 2, Conn.

REGULATORS—Voltage

Airmec Ltd., High Wycombe, Buckinghamshire, England
American Machine & Foundry Co., Electronics Div., 1085 Commonwealth Ave., Boston 15, Mass.
American Relay & Controls, Inc., 3621 W. Howard St., Skokie, Ill.
Amplifier Corp. of America, 396 Broadway, New York 13, N. Y.
ANTON ELECTRONIC LABS., INC., 1226–36 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 150
Associated Engineering Corp. of Boston, 65 Kent St., Brookline 46, Mass.
Avion Instrument Corp., Div. of American Car & Foundry Co., 295 State Highway #17, Paramus, N. J.
Burlington Instrument Co., 203 N. Third St., Burlington, Iowa
Chatham Electronics Corp., Livingston, N. J.
CLEGG LABORATORIES, INC., 142 S. Livingston Ave., Livingston, N. J. ADV. PG. 110
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
Douglas Radio Labs., 176 Norfolk Ave., Boston 19, Mass.
Electric Regulator Corp., Norwalk, Conn.
Electronic Measurements Co., Inc., Lewis St. & Maple Ave., Eatontown, N. J.
Electronic Research Associates, Inc., 715 Main St., North Caldwell, N. J.
Federal Telephone & Radio Co., A Div. of International Telephone & Telegraph Corp., 100 Kingsland Rd., Clifton, N. J.
Ferranti Electric, Inc., 30 Rockefeller Plaza, New York 20, N. Y.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
General Magnetics, Inc., 135 Bloomfield Ave., Bloomfield, N. J.
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
Industrial Test Equipment Co., 55 E. 11th St., New York 3, N. Y.
Inet Div. of Leach Corp., 4441 Santa Fe Ave., Los Angeles 58, Calif.
Kay-Lab, Inc., 1090 Marena Blvd., San Diego 10, Calif.
KEPCO LABS., 131–38 Sanford Ave., Flushing, N. Y. ADV. PG. 25
Lambda Electronics Corp., 103–02 Northern Blvd., Corona, N. Y.
Magnetic Amplifiers, Inc., 632 Tinton Ave., New York 55, N. Y.
Maxson Corp., W. L., 460 W. 34th St., New York 1, N. Y.
Mercury Electronic Co., Box 450, Red Bank, N. J.
Minnesota Electronics Corp., 1058 University Ave., St. Paul 4, Minn.
Nuclear Development Laboratory, P. O. Box 7034, Kansas City, Mo.
Ohmite Mfg. Co., 3601 Howard St., Skokie, Ill.
Peschel Electronics, Inc., 13 Garden St., New Rochelle, N. Y.
Power Designs, Inc., 119–22 Atlantic Ave., Richmond Hill 19, N. Y.
Precise Measurements Co., 942 Kings Highway, Brooklyn 23, N. Y.
Raytheon Mfg. Co., Equipment Operations, Waltham 54, Mass.
Red Bank Division, Bendix Aviation Corp., Eatontown, N. J.
Regulator Equipment Corp., 56 California Ave., Paterson 3, N. J.
Sola Electric Co., 4633 W. 16th St., Chicago 50, Ill.
Sorensen & Co., Inc., 375 Fairfield Ave., Stamford, Conn.
Superior Electric Co., 83 Laurel St., Bristol, Conn.
Thordarson-Meissner Mfg. Divs., Mt. Carmel, Ill.
Ultrasonic Corp., 640 Memorial Drive, Cambridge 39, Mass.
United Transformer Co., 150 Varick St., New York 13, N. Y.
Varo Mfg. Co., Inc., 1801 Walnut St., Garland, Texas
Vickers Electric Division, Vickers, Inc., 1840 Locust St., St. Louis 3, Mo.
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 107
Weltronic Co., 19500 W. Eight Mile Rd., Detroit 19, Mich.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.

RELAYS—Electronic

Aircraft Transformer Corp., West & Willow Aves., Long Branch, N. J.
Airpax Products Co., Middle River, Baltimore 20, Md.
Automatic Switch Co., 391 Lakeside Ave., Orange, N. J.
Automatic Temperature Control Co., Inc., 5206 Pulaski Ave., Philadelphia 44, Pa.
Autotron Co., Box 722, Danville, Ill.
Burroughs Corp., Electronic Instruments Div., 1209 Vine St., Philadelphia 7, Pa.
C.G.S. Laboratories, Inc., 391 Ludlow St., Stamford, Conn.
Caltron Co., 1406 S. Hobart Blvd., Los Angeles 6, Calif.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Clark Controller Co., 1146 E. 152nd St., Cleveland 10, Ohio
Comar Electric Co., 3349 W. Addison St., Chicago 18, Ill.
Cutler-Hammer Inc., 412 N. 12th St., Milwaukee 1, Wis.
Electronic Control Corp., 1573 E. Forest, Detroit 7, Mich.
Electro-Physics Co., 287-L Broadway, New York 7, N. Y.
Farmer Electric Co., 21 Mossfield Rd., Waban 68, Mass.
Federal Telephone & Radio Co., A Div. of International Telephone & Telegraph Corp., 100 Kingsland Rd., Clifton, N. J.
Fielden Instrument Div., Robertshaw-Fulton Controls Co., 2920 N. 4th St., Philadelphia 33, Pa.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Five Star Co., The, West Main St., Plantsville, Conn.
General Communication Co., 681 Beacon St., Boston 15, Mass.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Giannini & Co., G. M., Pasadena 1, Calif.
Greiner Co., Emil, 26 N. Moore St., New York 13, N. Y.
Guardian Electric Co., 1625 W. Walnut St., Chicago 12, Ill.
Kahn & Co., Inc., 541 Windsor St., Hartford, Conn.
Labline, Inc., 217 N. Desplaines St., Chicago 6, Ill.
Lumenite Electric Co., 407 S. Dearborn St., Chicago 5, Ill.
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., S., Minneapolis, Minn.
Peschel Electronics, Inc., 13 Garden St., New Rochelle, N. Y.
Phaostron Co., 151 Pasadena Ave., South Pasadena, Calif.
Phillips Control Corp., 59 W. Washington St., Joliet, Ill.
Photobell Co., 116 Nassau St., New York 7, N. Y.
Photoswitch Div., Electronic Corp. of America, 77 Broadway, Cambridge 42, Mass.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Process & Instruments, 15 Stone Ave., Brooklyn 33, N. Y.
Research Electronics Laboratory, Roslyn, Pa.
Sanders Associates, Inc., Nashua, N. H.
Servo-Tek Products Corp., 1086 Goffle Rd., Hawthorne, N. J.
Signal Engineering & Mfg. Co., 273 Branchport Ave., Long Branch, N. J.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Thermo Instrument Co., P. O. Box 336, 1310 Old County Rd., Belmont, Calif.
Trott Electronics Co., 1944 Clinton Ave., N., Rochester 21, N. Y.
Vacuum Tube Products, 506 S. Cleveland St., Oceanside, Calif.
Varo Mfg. Co., Inc., 1801 Walnut St., Garland, Texas
Videon Electronic Corp., 902 E. Michigan St., Indianapolis 2, Ind.
Weston Electrical Instrument Corp., 614 Frelinghuysen Ave., Newark 5, N. J.
Wheaton Co., T. C., Millville, N. J.
Womer Electronic Devices, Rankin, Ill.

RELAYS—Magnetic

Aircraft Transformer Corp., West & Willow Aves., Long Branch, N. J.
Airpax Products Co., Middle River, Baltimore 20, Md.
ALLEN-BRADLEY CO., 136 W. Greenfield Ave., Milwaukee 4, Wis. ADV. PG. 113
American Relay & Controls, Inc., 3621 W. Howard St., Skokie, Ill.
Arrow-Hart & Hegeman Electric Co., 103 Hawthorn St., Hartford 6, Conn.
Assembly Products, Inc., Chagrin Falls 6, Ohio
Automatic Switch Co., 391 Lakeside Ave., Orange, N. J.
Branson Corp., 113 Cornelia St., Boonton, N. J.
Caltron Co., 1406 S. Hobart Blvd., Los Angles 6, Calif.
Clark Controller Co., 1146 E. 152nd St., Cleveland 10, Ohio
Comar Electric Co., 3349 W. Addison St., Chicago 18, Ill.
Connecticut Telephone & Electric Corp., 70 Brittania St., Meriden, Conn.
Couch Co., Inc., S. H., North Quincy 71, Mass.
Cutler-Hammer, Inc., 412 N. 12th St., Milwaukee 1, Wis.
Edison, Inc., Thomas A., Instrument Div., West Orange, N. J.
Five Star Co., The, West Main St., Plantsville, Conn.
General Controls Co., Glendale 1, Calif.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
General Magnetics, Inc., 135 Bloomfield Ave., Bloomfield, N. J.
Giannini & Co., G. M., Pasadena 1, Calif.
Guardian Electric Co., 1625 W. Walnut St., Chicago 12, Ill.
Gulton Mfg. Corp., 212 Durham Ave., Metuchen, N. J.
Hi-G, Inc., Bradley Field, Windsor Locks, Conn.
Imtra Corp., 58 Charles St., Cambridge 41, Mass.
Industrial Specialties Corp., 323 Atlantic Ave., Brooklyn 1, N. Y.
Jennings Radio Mfg. Corp., 970 McLaughlin Ave., San Jose 12, Calif.
Kahn & Co., Inc., 541 Windsor St., Hartford, Conn.
Kellogg Switchboard & Supply Co., 79 W. Monroe, Chicago 3, Ill.
Lumenite Electric Co., 407 S. Dearborn St., Chicago 5, Ill.
Magnetic Research Corp., 200 E. Center St., El Segundo, Calif.
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., S., Minneapolis, Minn.
Phaostron Co., 151 Pasadena Ave., South Pasadena, Calif.
Phillips Control Corp., 59 W. Washington St., Joliet, Ill.
Polytron Engineering, Inc., 32 W. Biddle St., Baltimore 1, Md.
Potter & Brumfield Mfg. Co., Princeton, Ind.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Price Electric Corp., Frederick, Md.
RADIO CORPORATION OF AMERICA, TUBE DIV., Harrison, N. J. ADV. PG. 19
Signal Engineering & Mfg. Co., 273 Branchport Ave., Long Branch, N. J.
Sterling Engineering Co., Inc., 54 Mill St., Laconia, N. H.
Struthers-Dunn, Inc., Lamb's Rd., Pitman, N. J.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Thermo Instrument Co., P. O. Box 336, 1310 Old County Rd., Belmont, Calif.
U. S. Electronics Corp., 276 Warren St., Lyndhurst, N. J.
Videon Electronics Corp., 902 E. Michigan St., Indianapolis 2, Ind.
Ward Leonard Electric Co., 121 South St., Mt. Vernon, N. Y.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.

RELAYS—Sensitive

Adams & Westlake Co., Michigan St., Elkhart, Ind.
Aircraft Transformer Corp., West & Willow Aves., Long Branch, N. J.
Airpax Products Co., Middle River, Baltimore 20, Md.
American Instrument Co., Inc., 8030 Georgia Ave., Silver Spring, Md.
American Relay & Controls, Inc., 3621 W. Howard St., Skokie, Ill.
Arrow-Hart & Hegeman Electric Co., 103 Hawthorn St., Hartford 6, Conn.
Assembly Products, Inc., Chagrin Falls 6, Ohio
Automatic Switch Co., 391 Lakeside Ave., Orange, N. J.
Biddle Co., James G., 1316 Arch St., Philadelphia 7, Pa.
Caltron Co., 1406 S. Hobart Blvd., Los Angeles 6, Calif.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Comar Electric Co., 3349 W. Addison St., Chicago 18, Ill.
Connecticut Telephone & Electric Corp., 70 Brittania St., Meriden, Conn.
Edison Inc., Thomas A., Instrument Div., West Orange, N. J.
Elly Electronics Corp., 20–21 Wagaraw Rd., Box 395, Fair Lawn, N. J.
Five Star Co., The, West Main St., Plantsville, Conn.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Giannini & Co., G. M., Pasadena 1, Calif.
Guardian Electric Co., 1625 W. Walnut St., Chicago 12, Ill.
Hi-G, Inc., Bradley Field, Windsor Locks, Conn.
Imtra Corp., 58 Charles St., Cambridge 41, Mass.
Industrial Specialties Corp., 323 Atlantic Ave., Brooklyn 1, N. Y.
Kahn & Co., Inc., 541 Windsor St., Hartford, Conn.
Kellogg Switchboard & Supply Co., 79 W. Monroe, Chicago 3, Ill.
Labline, Inc., 217 N. Desplaines St., Chicago 6, Ill.
Larson Instrument Co., 24 Orchard St., Tarrytown, N. Y.
Lumenite Electric Co., 407 S. Dearborn St., Chicago 5, Ill.
Marion Electrical Instrument Co., 402 Canal St., Manchester, N. H.
Mercoid Corp., 4201 Belmont Ave., Chicago 41, Ill.
Phaostron Co., 151 Pasadena Ave., South Pasadena, Calif.
Phillips Control Corp., 59 W. Washington St., Joliet, Ill.
Potter & Brumfield Mfg. Co., Princeton, Ind.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Price Electric Corp., Frederick, Md.
Sargent & Co., E. H., 4647 W. Foster Ave., Chicago 30, Ill.
Sigma Instruments, Inc., 180 Pearl St., South Braintree, Boston 85, Mass.
Signal Engineering & Mfg. Co., 273 Branchport Ave., Long Branch, N. J.
Sterling Engineering Co., 54 Mill St., Laconia, N. H.
Struthers-Dunn, Inc., Lamb's Rd., Pitman, N. J.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Terado Co., 1068 Raymond Ave., St. Paul 14, Minn.
Tung-Sol Electric, Inc., 95 Eighth Ave., Newark 4, N. J.
Ward Leonard Electric Co., 121 South St., Mt. Vernon, N. Y.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.
Weston Electrical Instrument Corp., 614 Frelinghuysen Ave., Newark 5, N. J.

RELAYS—Thermal Delay

Aircraft Transformer Corp., West & Willow Aves., Long Branch, N. J.
ALLEN-BRADLEY CO., 136 W. Greenfield Ave., Milwaukee 4, Wis. ADV. PG. 113
American Instrument Co., Inc., 8030 Georgia Ave., Silver Spring, Md.
Branson Corp., 113 Cornelia St., Boonton, N. J.
Caltron Co., 1406 S. Hobart Blvd., Los Angeles 6, Calif.
Edison, Inc., Thomas A., Instrument Div., West Orange, N. J.
Elly Electronics Corp., 20–21 Wagaraw Rd., Box 395, Fair Lawn, N. J.
G-V Controls, Inc., 28 Hollywood Plaza, East Orange, N. J.
General Controls Co., Glendale 1, Calif.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Guardian Electric Co., 1625 W. Walnut St., Chicago, Ill.
Metals & Controls Corp., General Plate Div., Spencer Thermostat Div., Attleboro, Mass.
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., S., Minneapolis, Minn.
Phaostron Co., 151 Pasadena Ave., South Pasadena, Calif.
Photobell Co., 116 Nassau St., New York 7, N. Y.
Stevens Mfg. Co., Inc., 69 S. Walnut St., Mansfield, Ohio
Struthers-Dunn, Inc., Lamb's Rd., Pitman, N. J.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Tung-Sol Electric, Inc., 95 Eighth Ave., Newark 4, N. J.
Ulanet Co., George, 413 Market St., Newark 5, N. J.
Ultrasonic Corp., 640 Memorial Drive, Cambridge 39, Mass.
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 107
Ward Leonard Electric Co., 121 South St., Mt. Vernon, N. Y.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.

REMOTE HANDLING DEVICES

Aeronautical Research Labs., General Mills., Inc., 2010 E. Hennepin Ave., Minneapolis 13, Minn.
Alderson Research Laboratories, Inc., 10 E. 38th St., New York 16, N. Y.
American Machine & Foundry Co., Atomic Energy Dept., 261 Madison Ave., New York 16, N. Y.
Atomic Energy of Canada, Ltd., Commercial Products Div., P. O. Box 93, Ottawa, Ontario, Canada
Atomlab, Inc., 489 Fifth Ave., New York 17, N. Y.
Barnes Co., W. F. & John, 201 S. Water St., Rockford, Ill.
C.G.S. Laboratories, Inc., 391 Ludlow St., Stamford, Conn.
CENTRAL RESEARCH LABORATORIES, INC., Red Wing, Minn. ADV. PG. 12, 13
Collins Radio Co., Cedar Rapids, Iowa
Conoflow Corp., 2100 Arch St., Philadelphia 3, Pa.
EKCO ELECTRONICS LTD., EKCO WORKS, Southend-on-Sea, Essex, England. ADV. PG. 127
Elm Laboratories, 18 South Broadway, Dobbs Ferry, N. Y.
Falk & Co., Ltd., M., 5 Victoria St., London, S. W. 1, England
FARREL-BIRMINGHAM CO., INC., Ansonia, Conn. ADV. PG. 111
FORD INSTRUMENT CO., DIV. OF SPERRY CORP., 31–10 Thomson Ave., Long Island City, N. Y. ADV. PG. 105
GENERAL ELECTRIC CO., ATOMIC POWER EQUIPMENT COMPONENT, 2900 Campbell Ave., Schenectady 6, N. Y. ADV. PG. 2–6
GENERAL MILLS, INC., MECHANICAL DIV., 1620

Central Ave., N. E., Minneapolis, Minn. ADV. PG. 101
Isotope Specialties Co., 3816 San Fernando Rd., Glendale, Calif.
Larson Instrument Co., 24 Orchard St., Tarrytown, N. Y.
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
Pantatron Ltd., Teleflex Works, High Rd., Chadwell Heath, Essex, England
Phillips Control Corp., 59 W. Washington St., Joliet, Ill.
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
Radioactive Products, Inc., 540 W. Congress St., Detroit 26, Mich.
TECHNICAL ASSOCIATES, 140 W. Providencia Ave., Burbank, Calif. ADV. PG. 109
Technical Operations, Inc., 6 Schouler Court, Arlington 74, Mass.
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.

RESISTORS

NOTE: Various types of resistors are not indicated in this listing. Contact manufacturer for specific type(s) desired.

Ace Electronics Associates, 125 Rogers Ave., Somerville 44, Mass.
Aerovox Corp., 740 Belleville Ave., New Bedford, Mass.
ALLEN-BRADLEY CO., 136 W. Greenfield Ave., Milwaukee 4, Wis. ADV. PG. 113
Bird Electronic Corp., 1800 E. 38th St., Cleveland 14, Ohio
Bond Electronics Corp., 60 Springfield Ave., Springfield, N. J.
British Electronic Sales Co., 23-03 45th Rd., Long Island City 1, N. Y.
Carborundum Co., Globar Div., Niagara Falls, N. Y.
Centralab Division of Globe-Union, Inc., 900 E. Keefe Ave., Milwaukee 1, Wis.
Cima Corp., 119 Braintree St., Allston 34, Mass.
Cinema Engineering Co., Div. of Aerovox Corp., 1100 Chestnut St., Burbank, Calif.
Clark Controller Co., 1146 E. 152nd St., Cleveland 10, Ohio
Clarostat Mfg. Co., Inc., Dover, New Hampshire
Cutler-Hammer, Inc., 412 N. 12th St., Milwaukee 1, Wis.
Dale Products, Inc., Columbus, Neb.
Daven Co., The, 191 Central Ave., Newark 4, N. J.
Dwyer Engineering Co., Inc., Box 483, Nashua, N. H.
Eastern Precision Resistor Corp., 130-11 90th Ave., Richmond Hill, N. Y.
Electronic Associates, Inc., Long Branch, N. J.
Electro-Mec Laboratory, Inc., 21-09 43rd Ave., Long Island City, N. Y.
Elektra-Serv Co., 480 Johnson Ave., Brooklyn 37, N. Y.
Erie Resistor Corp., 644 W. 12th St., Erie, Pa.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2-6
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
Glenco Corp., Metuchen, N. J.
Hardwick, Hindle, Inc., 40 Hermon St., Newark 5, N. J.
Hycor Co., Inc., 11423 Vanowen St., North Hollywood, Calif.
I-T-E Circuit Breaker Co., 19th & Hamilton Sts., Philadelphia 30, Pa.
Instrument Resistors Co., 1036 Commerce Ave., Union, N. J.
INTERNATIONAL RESISTANCE CO., 401 N. Broad St., Philadelphia 8, Pa. ADV. PG. 7
K-F Development Co., 2606 Spring St., Redwood City, Calif.
Keystone Carbon Co., Inc., Saint Marys, Pa.
Lectrohm, Inc., 5561 Northwest Highway, Chicago 30, Ill.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 131
Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.
Measurement Engineering Ltd., Arnprior, Ontario, Canada
Mepco Inc., 35-37 Abbett Ave., Morristown, N. J.
Micro-Circuits Co., New Buffalo, Mich.
Muirhead & Co., Ltd., Beckenham, Kent, England
Ohmite Mfg. Co., 3601 Howard St., Skokie, Ill.
Phaostron Co., 151 Pasadena Ave., South Pasadena, Calif.
Polytechnic Research & Development Co., Inc., 202 Tillary St., Brooklyn 1, N. Y.
Precision Inc., 730 Lyndale Ave., N., Minneapolis, Minn.
Reon Resistor Corp., 117 Stanley Ave., Yonkers, N. Y.
RESISTANCE PRODUCTS CO., 914 S. 13th St., Harrisburg, Pa. ADV. PG. 144
Rockbar Corp., 215 E. 37th St., New York 16, N. Y.
Rubicon Co., Ridge Ave. at 35th St., Philadelphia 32, Pa.
Sanders Associates, Inc., Nashua, N. H.
Sensitive Research Instrument Corp., 9 Elm Ave., Mt. Vernon, N. Y.
Shallcross Mfg., 10 Jackson Ave., Collingdale, Pa.
Speer Carbon Co., St. Marys, Pa.
Sprague Electric Co., North Adams, Mass.
Stackpole Carbon Co., St. Marys, Pa.
Stupakoff Ceramic & Mfg. Co., Latrobe, Pa.
Techron Co., 254-256 Friend St., Boston 10, Mass.
Tru-Ohm Products Div., Model Engineering & Mfg., Inc., 2800 Milwaukee Ave., Chicago 18, Ill.
U. M. & F. Mfg. Corp., 10929 Vanowen St., North Hollywood, Calif.
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 107
Victory Engineering Corp., Springfield Rd., Union, N. J.
Ward Leonard Electric Co., 121 South St., Mt. Vernon, N. Y.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.
WHITE DENTAL MFG. CO., S. S., 10 East 40th St., New York 16, N. Y. ADV. PG. 135
Winslow Co., Inc., 9 Liberty St., Newark, N. J.
Wirt Co., 5221 Greene St., Philadelphia 44, Pa.

RHEOSTATS

Ace Electronics Associates, 125 Rogers Ave., Somerville 44, Mass.
Alcar Instruments, Inc., 20-21 Wagaraw Rd., Fair Lawn, N. J.
ALLEN-BRADLEY CO., 136 W. Greenfield Ave., Milwaukee 4, Wis. ADV. PG. 113
Biddle Co., James G., 1316 Arch St., Philadelphia 7, Pa.
Bond Electronics Corp., 60 Springfield Ave., Springfield, N. J.
Bourns Laboratories, 6135 Magnolia Blvd., Riverside, Calif.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Clark Controller Co., 1146 E. 152nd St., Cleveland 10, Ohio
Clarostat Mfg. Co., Inc., Dover, New Hampshire
Columbia Electric Mfg. Co., 4519 Hamilton Ave., N. E., Cleveland 14, Ohio
Cutler-Hammer, Inc., 412 N. 12th St., Milwaukee 1, Wis.
Daven Co., The, 191 Central Ave., Newark 4, N. J.
DeJur-Amsco Corp., 45-01 Northern Blvd., Long Island City 1, N. Y.
Edcliff Instruments, 383 N. Foothill Blvd., Pasadena 8, Calif.
Electro Measurements, Inc., 4312 S. E. Stark St., Portland 15, Ore.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2-6
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
Hardwick, Hindle, Inc., 40 Hermon St., Newark 5, N. J.
INTERNATIONAL RESISTANCE CO., 401 N. Broad St., Philadelphia 8, Pa. ADV. PG. 7
K-F Development Co., 2606 Spring St., Redwood City, Calif.
Lesa, Via Bergamo 21, Milan, Italy
Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.
Measurement Engineering Ltd., Arnprior, Ontario, Canada
Muirhead & Co., Ltd., Beckenham, Kent, England
Ohmite Mfg. Co., 3601 Howard St., Skokie, Ill.
Stackpole Carbon Co., St. Marys, Pa.
Sticht Co., Inc., Herman H., 27 Park Place, New York 7, N. Y.
Tru-Ohm Products Div., Model Engineering & Mfg., Inc., 2800 Milwaukee Ave., Chicago 18, Ill.
U. M. & F. Mfg. Corp., 10929 Vanowen St., North Hollywood, Calif.
Ward Leonard Electric Co., 121 South St., Mt. Vernon, N. Y.
WELCH SCIENTIFIC CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.
Wirt Co., 5221 Greene St., Philadelphia 44, Pa.

RINGS—Absorption Fractionating

Johns-Manville, 22 E. 40th St., New York 16, N. Y.
Knight, Maurice A., 171 Kelly Ave., Akron, Ohio
Lapp Insulator Co., Inc., 31 Gilbert St., LeRoy, N. Y.
Shamban & Co., W. S., 11617 W. Jefferson Blvd., Culver City, Calif.
U. S. GASKET CO., FLUOROCARBON PRODUCTS, INC., DIV., 400 N. 10th St., Camden 1, N. J. ADV. PG. 149
U. S. Stoneware Co., Akron 9, Ohio

RODS—Hard Rubber

Luzerne Rubber Co., Muirhead Ave., Trenton, N. J.
Minor Rubber Co., 49 Ackerman St., Bloomfield, N. J.
U. S. Rubber Co., 1230 Avenues of the Americas, New York 20, N. Y.
Vanton Pump & Equipment Corp., 350 Fifth Ave., New York 1, N. Y.

ROOMS—Shielded Screen

Ace Engineering & Machine Co., Inc., 3642 N. Lawrence St., Philadelphia 40, Pa.
AMERAY CORP., Route #46, Kenvil, N. J. ADV. PG. 123
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 10
Bowser Technical Refrigeration Div. of Bowser, Inc., Terryville, Conn.
Lindgren & Associates, Erik A., 4515 N. Ravenswood Ave., Chicago 40, Ill.
RAY-PROOF CORP., 513 W. 54th St., New York, N. Y. ADV. PG. 22
Shielding, Inc., Riverside, N. J.
Williams & Associates, 4906 Del Ray Ave., Bethesda, Md.

SAFES

Atomlab, Inc., 489 Fifth Ave., New York 17, N. Y.
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 10
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
FARREL-BIRMINGHAM CO., INC., Ansonia, Conn. ADV. PG. 111
Isotope Accessories Co., Box 5458, Philadelphia 43, Pa.
Isotope Specialties Co., 3816 San Fernando Rd., Glendale, Calif.
Knapp Mills, Inc., 23-15 Borden Ave., Long Island City 1, N. Y.
Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
NATIONAL LEAD CO., 111 Broadway, New York 6, N. Y. ADV. PG. 27
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
RAY-PROOF CORP., 513 W. 54th St., New York, N. Y. ADV. PG. 22
Technical Operations, Inc., 6 Schouler Court, Arlington 74, Mass.
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
Western Radiation Lab., 1107 W. 24th St., Los Angeles 7, Calif.

SAMPLE HOLDERS & CHANGERS

Atomlab, Inc., 489 Fifth Ave., New York 17, N. Y.
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
NATIONAL RADIAC, INC., 10 Crawford St., Newark 2, N. J. ADV. PG. 21
NUCLEAR INSTRUMENT & CHEMICAL CO., 229 W. Erie St., Chicago 10, Ill. ADV. PG. 137
Nuclear Research Corp., Southampton, Pa.
Nuclear Research & Development Inc., 6425 Etzel Ave., St. Louis, Mo.
NUCLEONIC CO. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 112
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
TECHNICAL ASSOCIATES, 140 W. Providencia Ave., Burbank, Calif. ADV. PG. 109
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23

SAMPLING SYSTEMS—Air

Atomlab, Inc., 489 Fifth Ave., New York 17, N. Y.
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
Gast Mfg. Corp., 137 Hinkley St., Benton Harbor, Mich.
Isotope Specialties Co., 3816 San Fernando Rd., Glendale, Calif.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23

SCALERS—Battery Operated

ANTON ELECTRONIC LABS., INC., 1226-38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 150
Atomlab, Inc., 489 Fifth Ave., New York 17, N. Y.
BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121
Interelectronics Corp., 2432 Grand Concourse, New York 58, N. Y.

SCALERS—Binary

See also COUNTERS

ANTON ELECTRONIC LABS., INC., 1226-38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 150
ATOMIC INSTRUMENT CO., 84 Massachusetts Ave., Cambridge 39, Mass. ADV. PG. Inside Back Cover
Atomlab, Inc., 489 Fifth Ave., New York 17, N. Y.
Audio Products Corp., 2265 Westwood Blvd., Los Angeles 64, Calif.

Burroughs Corp., Electronic Instruments Div., 1209 Vine St., Philadelphia 7, Pa.
Centralab Div. of Globe-Union, Inc., 900 E. Keefe Ave., Milwaukee 1, Wis.
Cinema-Television Ltd., Worsley Bridge Rd., London, S. E. 26, England
Clary Multiplier Corp., 408 Junipero St., San Gabriel, Calif.
Cyclotron Specialties Co., Moraga 8, Calif.
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
Detectron Corp., 5420 Vineland Ave., North Hollywood, Calif.
Douglas Radio Labs., 176 Norfolk Ave., Boston 19, Mass.
Electrical & Physical Instrument Corp., 42–19 27th St., Long Island City 1, N. Y.
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
Falk & Co., Ltd., M., 5 Victoria St., London S. W. 1, England
Measurement Engineering Ltd., Arnprior, Ontario, Canada
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
North American Philips Co., Inc., 750 S. Fulton Ave., Mt. Vernon, N. Y.
NUCLEAR INSTRUMENT & CHEMICAL CORP., 229 W. Erie St., Chicago 10, Ill. ADV. PG. 137
NUCLEAR SPECIALTY CO., P. O. Box 455, Center Moriches, N. Y. ADV. PG. 134, 138
NUCLEONIC CO. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 112
Phebco, Inc., 3640 Woodland Ave., Baltimore 15, Md.
Potter Instrument Co., 115 Cutter Mill Rd., Great Neck, N. Y.
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
Radioactive Products, Inc., 540 W. Congress St., Detroit 26, Mich.
TECHNICAL ASSOCIATES, 140 W. Providencia Ave., Burbank, Calif. ADV. PG. 109
TECHNICAL MEASUREMENT CORP., 140–142 State St., New Haven, Conn. ADV. PG. 128
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
Trott Electronics Co., 1944 Clinton Ave., N., Rochester 21, N. Y.
Walkirt Co., 145 W. Hazel, Inglewood, Calif.
Wang Laboratories, 37 Hurley St., Cambridge 41, Mass.

SCALERS—Decade

See also COUNTERS

ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 150
ATOMIC INSTRUMENT CO., 84 Massachusetts Ave., Cambridge 39, Mass. ADV. PG. Inside Back Cover
Atomlab, Inc., 489 Fifth Ave., New York 17, N. Y.
BENDIX AVIATION CORP., CINCINNATI DIV., 203 W. Third St., Cincinnati 2, Ohio. ADV. PG. 14
BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121
Burroughs Corp., Electronic Instruments Div., 1209 Vine St., Philadelphia 7, Pa.
Cinema-Television Ltd., Worsley Bridge Rd., London, S. E. 26, England
Clary Multiplier Corp., 408 Junipero St., San Gabriel, Calif.
CURTISS-WRIGHT CO., ELECTRONICS DIV., Carlstadt, N. J. ADV. PG. 31
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
Detectron Corp., 5420 Vineland Ave., North Hollywood, Calif.
Douglas Radio Labs., 176 Norfolk Ave., Boston 19, Mass.
EKCO ELECTRONICS LTD., EKCO WORKS, Southend-on-Sea, Essex, England. ADV. PG. 127
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
Falk & Co., Ltd., M., 5 Victoria St., London S. W. 1, England
Hewlett-Packard Co., 395 Page Mill Rd., Palo Alto, Calif.
Laboratory for Electronics, Inc., 75 Pitts St., Boston 14, Mass.
Measurement Engineering Ltd., Arnprior, Ontario, Canada
North American Philips Co., Inc., 750 S. Fulton Ave., Mt. Vernon, N. Y.
NUCLEAR INSTRUMENT & CHEMICAL CORP., 229 W. Erie St., Chicago 10, Ill. ADV. PG. 137
NUCLEAR MEASUREMENTS CORP., 2460 N. Arlington Ave., Indianapolis 18, Ind. ADV. PG. 122
NUCLEONIC CO. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 112
Phebco, Inc., 3640 Woodland Ave., Baltimore 15, Md.
Potter Instrument Co., 115 Cutter Mill Rd., Great Neck, N. Y.
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
TECHNICAL ASSOCIATES, 140 W. Providencia Ave., Burbank, Calif. ADV. PG. 109
TECHNICAL MEASUREMENT CORP., 140–142 State St., New Haven, Conn. ADV. PG. 128
Telecomputing Corp., 133 E. Santa Anita Ave., Burbank, Calif.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
Trott Electronics Co., 1944 Clinton Ave., N., Rochester 21, N. Y.
Walkirt Co., 145 W. Hazel, Inglewood, Calif.
Wang Laboratories, 37 Hurley St., Cambridge 41, Mass.

SCALES—Laboratory

ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 150
BURKE & JAMES, INC., 321 S. Wabash, Chicago, Ill. ADV. PG. 138
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Eberbach Corp., Ann Arbor, Mich.
Exact Weight Scale Co., 944 W. Fifth Ave., Columbus 8, Ohio
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Gaertner Scientific Corp., 1237 Wrightwood Ave., Chicago, Ill.
Gerber Scientific Instrument Co., 89 Spruce St., Hartford, Conn.
Ohaus Scale Co., 1050 Commerce Ave., Union, N. J.
WELCH SCIENTIFIC CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

SCALES—Platform

Exact Weight Scale Co., 944 W. Fifth Ave., Columbus 8, Ohio
Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago 5, Ill.
WELCH SCIENTIFIC CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148

SCALES—Spring

WELCH SCIENTIFIC CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148

SCINTILLATION COUNTERS

See COUNTERS
CRYSTALS
PHOSPHORS

SCINTILLATORS—Liquid

SCINTILLATORS—Plastic

See PHOSPHORS—Scintillation

SCREENS—Laboratory

AMERAY CORP., Route #46, Kenvil, N. J. ADV. PG. 123
Central Scientific Co., 1700 Irving Park Blvd., Chicago 13, Ill.
Consolidated Siphon Supply Co., 24 Wooster St., New York, N. Y.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.

SCREENS, SIEVES

Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Consolidated Siphon Supply Co., Inc., 24 Wooster St., New York, N. Y.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Newark Wire Cloth Co., 351 Verona Ave., Newark 4, N. J.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

SCREENS—X-Ray

AMERAY CORP., Route #46, Kenvil, N. J. ADV. PG. 123
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 10
Picker X-Ray Corp., 25 S. Broadway, White Plains, N. Y.
RAY-PROOF CORP., 513 W. 54th St., New York, N. Y. ADV. PG. 22
St. John X-Ray Laboratory, Califon, N. J.
U. S. RADIUM CORP., 535 Pearl St., New York 7, N. Y. ADV. PG. 108
X-Ray Dept. of General Electric Co., 4855 Electric Ave., Milwaukee, Wis.

SCRUBBERS—Gas

Ace Glass, Inc., Vineland, N. J.
Foster Wheeler Corp., 165 Broadway, New York 6, N. Y.
Knight, Maurice A., 171 Kelly Ave., Akron, Ohio

SERVOMECHANISMS

Ahrendt Instrument Co., 4910 Calvert Rd., College Park, Md.
Air Associates, Inc., Teterboro, N. J.
Askania Regulator Co., 240 E. Ontario St., Chicago 11, Ill.
Audio Instrument Co., Inc., 133 W. 14th St., New York 11, N. Y.
Automatic Temperature Control Co., Inc., 5206 Pulaski Ave., Philadelphia 44, Pa.
Avien, Inc., 58–15 Northern Blvd., Woodside 77, N. Y.
Belock Instrument Corp., 13–11 111th St., College Point, N. Y.
Bill Jack Scientific Instrument Co., P. O. Box C-39, Solana Beach, Calif.
Bogue Electric Mfg. Co., 52 Iowa Ave., Paterson 3, N. J.
Breeze Corporations, Inc., 700 Liberty Ave., Union, N. J.
Bristol Co., Waterbury 20, Conn.
Bristol Engineering Corp., Lincoln Ave. & Pond St., Bristol 1, Pa.
Century Electric Co., 1806 Pine St., St. Louis 3, Mo.
Clary Multiplier Corp., 408 Junipero St., San Gabriel, Calif.
Clifford Mfg. Co., Grove St., Waltham, Mass.
Clifton Precision Products Co., Broadway & Maple Ave., Clifton Heights, Pa.
Control Electronics Co., Inc., 1925 New York Ave., Huntington Station, N. Y.
Cubic Corp., 2841 Canon St., San Diego 6, Calif.
CURTISS-WRIGHT CO., ELECTRONICS DIV., Carlstadt, N. J. ADV. PG. 31
Dage Electronics Div., Thompson Products, Inc., 69 N. Second St., Beech Grove, Ind.
Dalmo Victor Co., 1414 El Camino Real, San Carlos, Calif.
Dalmotor Co., 1375 Clay St., Santa Clara, Calif.
Daystrom Instrument Co., Archbald, Pa.
Doelcam Corp., 1400 Soldiers Field Rd., Boston 35, Mass.
Eclipse-Pioneer Div., Bendix Aviation Corp., Teterboro, N. J.
Electronic Associates, Inc., Long Branch, N. J.
Farrand Optical Co., Inc., Bronx Blvd. at E. 238th St., New York 70, N. Y.
Federal Telephone & Radio Co., A Div. of International Telephone & Telegraph Corp., 100 Kingsland Rd., Clifton, N. J.
FORD INSTRUMENT CO., DIV. OF SPERRY CORP., 31–10 Thomson Ave., Long Island City, N. Y. ADV. PG. 105
GENERAL MILLS, INC., MECHANICAL DIV., 1620 Central Ave., N. E., Minneapolis, Minn. ADV. PG. 101
Goodyear Aircraft Corp., 1210 Massillon Rd., Akron 15, Ohio
Hycon Mfg. Co., 2961 E. Colorado St., Pasadena 8, Calif.
I-T-E Circuit Breaker Co., 19th & Hamilton Sts., Philadelphia 30, Pa.
Industrial Control Co., Straight Path & Arlington Ave., Wyandanch, N. Y.
Industrial Test Equipment Co., 55 E. 11th St., New York 3, N. Y.
Infra Electronic Corp., Roseland, N. J.
Kahn & Co., Inc., 541 Windsor St., Hartford, Conn.
Ketay Instrument Corp., 555 Broadway, New York 12, N. Y.
Larson Instrument Co., 24 Orchard St., Tarrytown, N. Y.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 131
LERMAC INC., 5303 Adeline St., Oakland, Calif. ADV. PG. 114
Librascope, Inc., 808 Western Ave., Glendale, Calif.
Link Aviation, Inc., Binghamton, N. Y.
Magnavox Co., Components Div., Fort Wayne 4, Ind.
Maxson Corp., W. L., 460 W. 34th St., New York 1, N. Y.
Mid-Century Instrumatic Corp., 611 Broadway, New York 12, N. Y.
Midwestern Geophysical Lab., 3400 S. Harvard, Tulsa, Okla.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Back Cover
Mission-Western Engineers, Inc., 132 W. Colorado, Pasadena 1, Calif.
Muirhead & Co., Ltd., Beckenham, Kent, England
Naer Corp., 2301 S. Purdue Ave., West Los Angeles, Calif.
Northeastern Engineering, Inc., Manchester, N. H.
Oster Mfg. Co., John, Avionic Div., 1 Main St., Racine, Wis.

Polytechnic Research & Development Co., Inc., 202 Tillary St., Brooklyn 1, N. Y.
Press Wireless Laboratories, Inc., 25 Prospect Place, West Newton 65, Mass.
Sangamo Electric Co., Springfield, Ill.
Servo Corp. of America, 2020 Jericho Turnpike, New Hyde Park, N. Y.
Servomechanisms, Inc., 500 Franklin Ave., Garden City, N. Y.
Servospeed Div., Electro Devices, Inc., 4 Godwin Ave., Paterson 1, N. J.
Servo-Tek Products Corp., 1086 Goffle Rd., Hawthorne, N. J.
Small Motors, Inc., 2076 Elston Ave., Chicago 14, Ill.
Standard Electronics Research Corp., 2 East End Ave., New York 21, N. Y.
Taller & Cooper Inc., 75 Front St., Brooklyn, N. Y.
Trans-Sonics, Inc., Bedford Airport, Bedford, Mass.
Ultrasonic Corp., 640 Memorial Drive, Cambridge 39, Mass.

SHADES—Light-Proof

AMERAY CORP., Route #46, Kenvil, N. J. ADV. PG. 123
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 10
Picker X-Ray Corp., 25 S. Broadway, White Plains, N. Y.
RAY-PROOF CORP., 513 W. 54th St., New York, N Y. ADV. PG. 22
X-Ray Dept. of General Electric Co., 4855 Electric Ave., Milwaukee, Wis.

SHAFTS—Flexible

STEWART MFG. CORP., F. W., 4311 Ravenswood Ave., Chicago 13, Ill. ADV. PG. 126
WHITE DENTAL MFG. CO., S. S., 10 E. 40th St., New York 16, N. Y. ADV. PG. 135

SHAKERS

Aloe Scientific Div., A. S. Aloe Co., 5655 Kingsbury Blvd., St. Louis 12, Mo.
Burrell Corp., 2233 Fifth Ave., Pittsburgh, Pa.
Eberbach Co.p., Ann Arbor, Mich.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Measurement Engineering Ltd., Amprior, Ontario, Canada
Newark Wire Cloth Co., 351 Verona Ave., Newark 4, N. J.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Sargent & Co., E. H., 4647 W. Foster Ave., Chicago 30, Ill.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

SHEETS—Hard Rubber

Felt Products Mfg. Co., 1504 W. Carroll Ave., Chicago, Ill.
Garlock Packing Co., Palmyra, N. Y.
Luzerne Rubber Co., Muirhead Ave., Trenton, N. J.
Minor Rubber Co., 49 Ackerman St., Bloomfield, N. J.
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.
Vanton Pump & Equipment Corp., 350 Fifth Ave., New York 1, N. Y.

SHIELDED SCREEN ROOMS

See ROOMS—Shielded Screen

SHIELDING—Radiation

AMERAY CORP., Route #46, Kenvil, N. J. ADV. PG. 123
ATOMIC INSTRUMENT CO., 84 Massachusetts Ave., Cambridge 39, Mass. ADV. PG. Inside Back Cover
Atomlab, Inc., 489 Fifth Ave., New York 17, N. Y.
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 10
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bio-Rad Laboratories, 800 Delaware St., Berkeley, Calif.
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
Division Lead Co., 7742 W. 61st Place, Summit, Ill.
EKCO ELECTRONICS, LTD., EKCO WORKS, Southend-on-Sea, Essex, England. ADV. PG. 127
Fansteel Metallurgical Corp., North Chicago, Ill.
FARREL-BIRMINGHAM CO., INC., Ansonia, Conn. ADV. PG. 111
Fish-Schurman Corp., 70 Portman Rd., New Rochelle, N. Y.
HURON INDUSTRIES, P. O. Box 557, Port Huron, Mich. ADV. PG. 146
Isotope Accessories Co., Box 5458, Philadelphia 43, Pa.
Knapp Mills, Inc., 23-15 Borden Ave., Long Island City 1, N. Y.
LENNARD CO., INC., P. M., 671 Bergen St., Brooklyn 38, N. Y. ADV. PG. 26
LERMAC INC., 5303 Adeline St., Oakland, Calif. ADV. PG. 114
Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.
NATIONAL LEAD CO., 111 Broadway, New York 6, N. Y. ADV. PG. 27
NATIONAL RADIAC, INC., 10 Crawford St., Newark 2, N. J. ADV. PG. 21
NUCLEAR DEVELOPMENT ASSOCIATES, INC., 80 Grand St., White Plains, N. Y. ADV. PG. 102
Nuclear Research Corp., Southampton, Pa.
NUCLEONIC CO. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 112
Panta Instruments Ltd., 26, Savage Gardens, London, E. C. 3, England
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
RAY-PROOF CORP., 513 W. 54th St., New York, N. Y. ADV. PG. 22
Sylvania Electric Products, Inc., 1740 Broadway, New York 19, N. Y.
Technical Operations, Inc., 6 Schouler Court, Arlington 74, Mass.
Telectro Industries Corp., 35-16 37th St., Long Island City 1, N. Y.
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
WOOD COUNTER LABORATORY, N., 5491 Blackstone, Chicago 15, Ill. ADV. PG. 139

SHUNTS—Ayrton

Bond Electronics Corp., 60 Springfield Ave., Springfield, N. J.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 131
Rubicon Co., Ridges Ave. at 35th St., Philadelphia 32, Pa.
Sensitive Research Instrument Corp., 9 Elm Ave., Mt. Vernon, N. Y.
Shallcross Mfg. Co., 10 Jackson Ave., Collingdale, Pa.

SIGNS—Warning, Radiation

ATOMIC INSTRUMENT CO., 84 Massachusetts Ave., Cambridge 39, Mass. ADV. PG. Inside Back Cover
CANADIAN RADIUM & URANIUM CORP., 630 Fifth Ave., New York 20, N. Y. ADV. PG. 133
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
Mine Safety Appliances Co., Braddock, Thomas & Meade Sts., Pittsburgh 8, Pa.
NUCLEAR INSTRUMENT & CHEMICAL CORP., 229 W. Erie St., Chicago 10, Ill. ADV. PG. 137
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143

SILICONE GREASE

Dow Corning Corp., Midland, Mich.
Emerson & Cuming, Inc., 869 Washington St., Canton, Mass.
General Electric Co., Chemical Div., 1 Plastics Ave., Pittsfield, Mass.
High Vacuum Equipment Corp., 349 Lincoln St., Hingham, Mass.
NATIONAL RADIAC, INC., 10 Crawford St., Newark 2, N. J. ADV. PG. 21
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132

SILICONE RUBBER

Auburn Mfg. Co., 500 Stack St., Middletown, Conn.
Connecticut Hard Rubber Co., New Haven 9, Conn.
Dow Corning Corp., Midland, Mich.
Electro Technical Products Div. of Sun Chemical Corp., 113 E. Centre St., Nutley, N. J.
Emerson & Cuming, Inc., 869 Washington St., Canton, Mass.
Felt Products Mfg. Co., 1504 W. Carroll Ave., Chicago 7, Ill.
Garlock Packing Co., Palmyra, N. Y.
General Electric Co., Chemical Div., 1 Plastics Ave., Pittsfield, Mass.
Maxwell Rubber Products Corp., Industrial St., W., Clifton, N. J.
Minor Rubber Co., 49 Ackerman St., Bloomfield, N. J.
Mitchell-Rand Insulation Co., Inc., 51 Murray St., New York 7, N. Y.
Republic Rubber Div., Lee Rubber & Tire Corp., Youngstown, Ohio
Stillman Rubber Co., 5811 Marilyn Ave., Culver City, Calif.

SINKS—Laboratory

See also FURNITURE—Laboratory

Accurate Sheet Metal & Mfg. Works, 2336-38 Milwaukee Ave., Chicago 47, Ill.
Alberene Stone Corp. of Virginia, 419 Fourth Ave., New York 16, N. Y.
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 10
BLICKMAN, INC., S., 7900 Gregory Ave., Weehawken, N. J. ADV. PG. 32
Brooklyn Hospital Equipment Co., Inc., 196 Lexington Ave., New York, N. Y.
Brown Morse Co., Muskegon, Mich.
Consolidated Siphon Supply Co., Inc., 24 Wooster St., New York, N. Y.
Cooper Co., D. C., 1467 S. Michigan Ave., Chicago, Ill.
Electric Steel Foundry Co., 2141 N. W. 25th Ave., Portland 10, Ore.
Fisher Scientific Co., 709 Forbes Ave., Pittsburgh 19, Pa.
General Ceramics & Steatite Corp., 250 Crows Mill Rd., Keasbey, N. J.
Hamilton Mfg. Co., Two Rivers, Wis.
Jarrell-Ash Co., 26 Farwell St., Newtonville, Mass.
Kewaunee Mfg. Co., 5083 S. Center St., Adrian, Mich.
Knight, Maurice A., 171 Kelly Ave., Akron, Ohio
Labline, Inc., 217 N. Desplaines St., Chicago 6, Ill.
Laboratory Furniture Co., Inc., P. O. Box 590, Mineola, N. Y.
Lyon Metal Products, Inc., 10 Montgomery St., Aurora, Ill.
Metalab Equipment Corp., 270 Duffy Ave., Hicksville, N. Y.
Watson Mfg. Co., Inc., Jamestown, N. Y.

SOURCES—Radioactivity

See ISOTOPES; NEUTRON SOURCES; REFERENCE SOURCES; X-RAY EQUIPMENT, etc.

SPECTROGRAPHS

Applied Research Labs., P. O. Box 1710, Glendale 5, Calif.
Baird Associates, Inc., 33 University Rd., Cambridge 38, Mass.
Bausch & Lomb Optical Co., 630 St. Paul St., Rochester 2, N. Y.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Fisher Scientific Co., 709 Forbes Ave., Pittsburgh 19, Pa.
Gaertner Scientific Corp., 1237 Wrightwood Ave., Chicago, Ill.
Jarrell-Ash Co., 26 Farwell St., Newtonville, Mass.
North American Philips Co., Inc., 750 S. Fulton Ave., Mt. Vernon, N. Y.
SCIENTIFIC SPECIALTIES CORP., Snow & Union Sts., Brighton 35, Mass. ADV. PG. 138
Sobotka Co., Eric, 104 W. 42nd St., New York, N. Y.

SPECTROMETERS

American Optical Co., Instrument Div., Buffalo 15, N. Y.
Applied Physics Corp., 362 W. Colorado Blvd., Pasadena 1, Calif.
Applied Research Labs., P. O. Box 1710, Glendale 5, Calif.
Baird Associates, Inc., 33 University Rd., Cambridge 38, Mass.
Bausch & Lomb Optical Co., 630 St. Paul St., Rochester 2, N. Y.
Beckman Instruments, Inc., 820 Mission St., South Pasadena 183, Calif.
Biddle Co., James G., 1316 Arch St., Philadelphia 7, Pa.
Central Scientific Co., 1700 Irving Park Blvd., Chicago 13, Ill.
CONSOLIDATED ENGINEERING CORP., 300 N. Sierra Madre Villa, Pasadena 15, Calif. ADV. PG. Inside Front Cover
Edmund Scientific Co., 502 E. Gloucester Pike, Barrington, N. J.
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
Farrand Optical Co., Inc., Bronx Blvd. at E. 238th St., New York 70, N. Y.
Gaertner Scientific Corp., 1237 Wrightwood Ave., Chicago, Ill.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2-6
Jarrell-Ash Co., 26 Farwell St., Newtonville, Mass.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 131
North American Philips Co., Inc., 750 S. Fulton Ave., Mt. Vernon, N. Y.
Perkin-Elmer Corp., Norwalk, Conn.
Precise Measurements Co., 942 Kings Highway, Brooklyn 23, N. Y.
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
SCIENTIFIC SPECIALTIES CORP., Snow & Union Sts., Brighton 35, Mass. ADV. PG. 138

TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
Varian Associates, 611 Hansen Way, Palo Alto, Calif.
WELCH SCIENTIFIC CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148
X-Ray Dept. of General Electric Co., 4855 Electric Ave., Milwaukee, Wis.

SPECTROMETERS—Gamma Ray

ATOMIC INSTRUMENT CO., 84 Massachusetts Ave., Cambridge 39, Mass. ADV. PG. Inside Back Cover
BEVA LABORATORY, 1640 Olden Ave., Ext., Trenton 9, N. J. ADV. PG. 116
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23

SPECTROMETERS—Mass

Beckman Instruments, Inc., 820 Mission St., South Pasadena 183, Calif.
CONSOLIDATED ENGINEERING CORP., 300 N. Sierra Madre Villa, Pasadena 15, Calif. ADV. PG. Inside Front Cover
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
Farrand Optical Co., Inc., Bronx Blvd. at E. 238th St., New York 70, N. Y.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Measurement Engineering Ltd., Arnprior, Ontario, Canada
Process & Instruments, 15 Stone Ave., Brooklyn 33, N. Y.
Vacuum Tube Products, 506 S. Cleveland St., Oceanside, Calif.

SPECTROPHOTOMETERS

American Electronic Laboratories, Inc., 641 Arch St., Philadelphia 6, Pa.
American Optical Co., Instrument Div., Buffalo 15, N. Y.
Applied Physics Corp., 362 W. Colorado Ave., Pasadena 1, Calif.
Baird Associates, Inc., 33 University Rd., Cambridge 38, Mass.
Bausch & Lomb Optical Co., 630 St. Paul St., Rochester 2, N. Y.
Beckman Instruments, Inc., 820 Mission St., South Pasadena 183, Calif.
Biddle Co., James G., 1316 Arch St., Philadelphia 7, Pa.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Coleman Instruments, Inc., Maywood, Ill.
Farrand Optical Co., Inc., Bronx Blvd. at E. 238th St., New York 70, N. Y.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Gaertner Scientific Corp., 1237 Wrightwood Ave., Chicago, Ill.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Hellige, Inc., 877 Stewart Ave., Long Island City 1, N. Y.
Jarrell-Ash Co., 26 Farwell St., Newtonville, Mass.
Kruger Instruments, Harold, Box 164, San Gabriel, Calif.
Perkin-Elmer Corp., Norwalk, Conn.
Phoenix Precision Instrument Co., 3803–05 North 5th St., Philadelphia, Pa.
Process & Instruments, 15 Stone Ave., Brooklyn 33, N. Y.
SCIENTIFIC SPECIALTIES CORP., Snow & Union Sts., Brighton 35, Mass. ADV. PG. 138
Sunshine Scientific Instrument, 180–12 Grant Ave., Philadelphia 15, Pa.
Telechrome, Inc., 88 Merrick Rd., Amityville, N. Y.

STANDARDS—Frequency

Airmec Ltd., High Wycombe, Buckinghamshire, England
AMERICAN TIME PRODUCTS, INC., 580 Fifth Ave., New York 36, N. Y. ADV. PG. 115
Borg Corp., George W., Borg Equipment Div., Janesville Wis.
Bristol Engineering Corp., Lincoln Ave. & Pond St., Bristol 1, Inc.
CLEGG LABORATORIES, INC., 142 S. Livingston Ave., Livingston, N. J. ADV. PG. 110
DeMornay-Bonardi, Inc., 780 S. Arroyo Parkway, Pasadena, Calif.
Franklin Electronics, Inc., 415 W. Pike St., Philadelphia 40, Pa.
Hewlett-Packard Co., 395 Page Mill Rd., Palo Alto, Calif.
Hycon Mfg. Co., 2961 E. Colorado St., Pasadena 8, Calif.
Industrial Test Equipment Co., 55 E. 11th St., New York 3, N. Y.
Kahn & Co., Inc., 541 Windsor St., Hartford, Conn.
Marconi Instruments, Ltd., 23 Beaver St., New York 4, N. Y.
Matawan Electronics Co., Inc., 236 Creek Rd., Keansburg, N. J.
Measurement Engineering Ltd., Arnprior, Ontario, Canada
Narda Corp., The, 66 Main St., Mineola, N. Y.
New London Instrument Co., P. O. Box 189, New London, Conn.
Norman Laboratories, Ernst, Williams Bay, Wis.
Ortho Filter Corp., 198 Albion Ave., Paterson 2, N. J.
Sorensen & Co., Inc., 375 Fairfield Ave., Stamford, Conn.
Standard Electric Time Co., 89 Logan St., Springfield, Mass.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Times Facsimile Corp., 540 W. 58th St., New York 19, N. Y.
Vectron, Inc., 400 Main St., Waltham, Mass.
Waveforms, Inc., 333 Sixth Ave., New York 14, N. Y.

STANDARDS—Radioactivity

See REFERENCE SOURCES

STANDS—Oscilloscope

Measurement Engineering Ltd., Arnprior, Ontario, Canada
Tektronix, Inc., P. O. Box 831, Portland 7, Ore.

STANDS—Titration

Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Fisher Scientific Co., 709 Forbes Ave., Pittsburgh 19, Pa.
Labline, Inc., 217 N. Desplaines St., Chicago 6, Ill.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Sargent & Co., E. H., 4647 W. Foster Ave., Chicago 30, Ill.

STERILIZERS

Aetna Scientific Co., Second & Spring Sts., Everett 49, Mass.
Barnstead Still & Sterilizer Co., 222 Lanesville Terrace, Boston 31, Mass.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Cooper-Hewitt Electric Co., 721 Grand St., Hoboken, N. J.
Emerson-Sack-Warner Corp., 150 Dorchester Ave., South Boston 27, Mass.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Labline, Inc., 217 N. Desplaines St., Chicago 6, Ill.
Panta Instruments Ltd., 26, Savage Gardens, London, E. C. 3, England
Pelton & Crane Co., 632 Harper Ave., Detroit, Mich.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

STILLS—Distilled Water

Aetna Scientific Co., Second & Spring Sts., Everett 49, Mass.
American Copper & Brass Works, Inc., Cincinnati 2, Ohio
Barnstead Still & Sterilizer Co., 222 Lanesville Terrace, Boston 31, Mass.
BLICKMAN, INC., S., 7900 Gregory Ave., Weehawken, N. J. ADV. PG. 32
Brighton Copper Works, Inc., 820 State Ave., Cincinnati 4, Ohio
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Emerson-Sack-Warner Corp., 150 Dorchester Ave., South Boston 27, Mass.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Foster Wheeler Corp., 165 Broadway, New York 6, N. Y.
Illinois Water Treatment Co., 858 Cedar St., Rockford, Ill.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
STOKES MACHINE CO., F. J., 5500 Tabor Rd., Philadelphia 20, Pa. ADV. PG. 24
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

STILLS—Laboratory

Ace Glass, Inc., Vineland, N. J.
Aetna Scientific Co., Second & Spring St., Everett 49, Mass.
American Copper & Brass Works, Inc., Cincinnati 2, Ohio
Barnstead Still & Sterilizer Co., 222 Lanesville Terrace, Boston 31, Mass.
BLICKMAN, INC., S., 7900 Gregory Ave., Weehawken, N. J. ADV. PG. 32
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Consolidated Vacuum Corp., 1775 Mt. Read Blvd., Rochester 3, N. Y.
Emerson-Sack-Warner Corp., 150 Dorchester Ave., South Boston 27, Mass.
Fisher Scientific Co., 709 Forbes Ave., Pittsburgh 19, Pa.
Glass Engineering Laboratories, Belmont, Calif.
Illinois Water Treatment Co., 858 Cedar St., Rockford, Ill.
Jasonals Chemical Corp., 825 E. 42nd St., Brooklyn 10, N. Y.
Pfaudler Co., 1002 West Ave., Rochester, N. Y.
Scientific Glass Apparatus Co., Inc., 100 Lakewood Terrace, Bloomfield, N. J.
STOKES MACHINE CO., F. J., 5500 Tabor Rd., Philadelphia 20, Pa. ADV. PG. 24
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

STIRRERS

Ace Glass, Inc., Vineland, N. J.
American Instrument Co., Inc., 8030 Georgia Ave., Silver Spring, Md.
B-I-F Industries, Inc., P. O. Box 1342, Providence, R. I.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Consolidated Siphon Supply Co., Inc., 24 Wooster St., New York, N. Y.
Eberbach Corp., Ann Arbor, Mich.
Fish-Schurman Corp., 70 Portman Rd., New Rochelle, N. Y.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Jasonals Chemical Corp., 825 E. 42nd St., Brooklyn 10, N. Y.
Labline, Inc., 217 N. Desplaines St., Chicago 6, Ill.
LERMAC INC., 5303 Adeline St., Oakland, Calif. ADV. PG. 114
Milwaukee Glass Works, Inc., 2338 N. 30th St., Milwaukee, Wis.
Mixing Equipment Co., 192 Mt. Read Blvd., Rochester 11, N. Y.
Omega Machine Co., Div. of B-I-F Industries, Inc., 530 Harris Ave., Providence 1, R. I.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Sargent & Co., E. H., 4647 W. Foster Ave., Chicago 30, Ill.
Sorvall, Inc., Ivan, P. O. Box 230 Pearl St., Norwalk, Conn.
Special Glass Products Co., 10 W. 33rd St., New York 1, N. Y.
U. S. GASKET CO., FLUOROCARBON PRODUCTS, INC., DIV., 600 N. 10th St., Camden 1, N. J. ADV. PG. 149
WELCH SCIENTIFIC CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148
Wilkens-Anderson Co., 4525 W. Division St., Chicago 51, Ill.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

STRESS ANALYSIS—Experimental

Baldwin-Lima-Hamilton Co., Philadelphia, Pa.
Franklin Electronics, Inc., 415 W. Pike St., Philadelphia 40, Pa.
Polyphase Instrument Co., 705 Haverford Rd., Bryn Mawr, Pa.
St. John X-Ray Laboratory, Califon, N. J.
Tatler & Cooper Inc., 75 Front St., Brooklyn, N. Y.

SURVEY METERS

See CHAMBERS, Ionization; COUNTERS, etc.

SWITCHES—Limit

Air Associates, Inc., Teterboro, N. J.
ALLEN-BRADLEY CO., 136 W. Greenfield Ave., Milwaukee 4, Wis. ADV. PG. 113
Connecticut Telephone & Electric Corp., 70 Britania St., Meriden, Conn.
Cutler-Hammer, Inc., 412 N. 12th St., Milwaukee 1, Wis.
Former Electric Co., 21 Mossfield Rd., Waban 68, Mass.
Fosco Industries, Inc., Rochester 2, N. Y.
General Control Company, 1200 Soldiers Field Rd., Boston 34, Mass.
General Controls Co., Glendale 1, Calif.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Haydon Switch Co., 232 N. Elm St., Waterbury 20, Conn.
Lesa, Via Bergamo 21, Milan, Italy
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., S., Minneapolis, Minn.
Naer Corp., 2301 S. Purdue Ave., West Los Angeles, Calif.
Phaostron Co., 151 Pasadena Ave., South Pasadena, Calif.
Phillips Control Corp., 59 W. Washington St., Joliet, Ill.
Shaltcross Mfg. Co., 10 Jackson Ave., Collingdale, Pa.

Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Ultrasonic Corp., 640 Memorial Drive, Cambridge 39, Mass.
Unimax Div. of The W. L. Maxson Corp., 460 W. 34th St., New York 1, N. Y.

SWITCHES—Pushbutton

ALLEN-BRADLEY CO., 136 W. Greenfield Ave., Milwaukee 4, Wis. ADV. PG. 113
Arrow-Hart Hegeman Electric Co., 103 Hawthorn St., Hartford 6, Conn.
British Electronic Sales Co., 23–03 45th Rd., Long Island City 1 N. Y.
Connecticut Telephone & Electric Corp., 70 Brittania St., Meriden, Conn.
Clary Multiplier Corp., 408 Junipero St., San Gabriel, Calif.
Cutler-Hammer, Inc., 412 N. 12th St., Milwaukee 1, Wis.
General Control Company, 1200 Soldiers Field Rd., Boston 34, Mass.
General Controls Co., Glendale 1, Calif.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Kellogg Switchboard & Supply Co., 79 W. Monroe, Chicago 3, Ill.
Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.
Metals & Controls Corp., General Plate Div., Spencer Thermostat Div., Attleboro, Mass.
Phillips Control Corp., 59 W. Washington St., Joliet, Ill.
Roanwell Corp., 662 Pacific St., Brooklyn 17, N. Y.
Shallcross Mfg. Co., 10 Jackson Ave., Collingdale, Pa.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Ultrasonic Corp., 640 Memorial Drive, Cambridge 39, Mass.
Ward Leonard Electric Co., 121 South St., Mt. Vernon, N. Y.
Winslow Co., Inc., 9 Liberty St., Newark, N. J.

SWITCHES—Remote Control

ALLEN-BRADLEY CO., 136 W. Greenfield Ave., Milwaukee 4, Wis. ADV. PG. 113
American Relay & Controls, Inc., 3621 W. Howard St., Skokie, Ill.
Arrow-Hart & Hegeman Electric Co., 103 Hawthorn St., Hartford 6, Conn.
Automatic Switch Co., 391 Lakeside Ave., Orange, N. J.
C.G.S. Laboratories, Inc., 391 Ludlow St., Stamford, Conn.
Centralab Div. of Globe-Union, Inc., 900 E. Keefe Ave., Milwaukee 1, Wis.
Cinema Engineering Co., Div. of Aerovox Corp., 1100 Chestnut St., Burbank, Calif.
Comar Electric Co., 3349 W. Addison St., Chicago 18, Ill.
Connecticut Telephone & Electric Corp., 70 Brittania St., Meriden, Conn.
Cutler-Hammer, Inc., 412 N. 12th St., Milwaukee 1, Wis.
Daven Co., The, 191 Central Ave., Newark 4, N. J.
General Communication Co., 681 Beacon St., Boston 15, Mass.
General Controls Co., Glendale 1, Calif.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Imtra Corp., 58 Charles St., Cambridge 41, Mass.
Jennings Radio Mfg. Corp., 970 McLaughlin Ave., San Jose 12, Calif.
Landis & Gyr, Inc., 45 W. 45th St., New York 36, N. Y.
Naer Corp., 2301 S. Purdue Ave., West Los Angeles, Calif.
Phillips Control Corp., 59 W. Washington St., Joliet, Ill.
Roller-Smith Corp., 1825 W. Market, Bethlehem, Pa.
Tech Laboratories, Inc., Bergen & Edsall Blvds., Palisades Park, N. J.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Ultrasonic Corp., 640 Memorial Drive, Cambridge 39, Mass.

TABLE TOPS—Laboratory

See also FURNITURE—Laboratory

Alberene Stone Corp. of Virginia, 419 Fourth Ave., New York 16, N. Y.
Alden Systems Co., Alden Research Center, Westboro, Mass.
Aloe Scientific Div., A. S. Aloe Co., 5655 Kingsbury Blvd., St. Louis 12, Mo.
BLICKMAN, INC., S., 7900 Gregory Ave., Weehawken, N. J. ADV. PG. 32
Brooklyn Hospital Equipment Co., Inc., 196 Lexington Ave., New York, N. Y.
Brown Morse Co., Muskegon, Mich.
Consolidated Siphon Supply Co., 24 Wooster St., New York, N. Y.
Durlach Can & Iron Works, 168 7th, Brooklyn, N. Y.
Electronic Mechanics, Inc., 101 Clifton Blvd., Clifton, N. J.
Emerson-Sack-Warner Corp., 150 Dorchester Ave., South Boston 27, Mass.
Fisher Scientific Co., 709 Forbes Ave., Pittsburgh 19, Pa.
Hamilton Mfg. Co., Two Rivers, Wis.
Johns-Manville, 22 E. 40th St., New York 16, N. Y.
Kewaunee Mfg. Co., 5083 S. Center St., Adrian, Mich.
Laboratory Furniture Co., Inc., P. O. Box 590, Minsola, N. Y.
LENNARD CO., INC., P. M., 671 Bergen St., Brooklyn 38, N. Y. ADV. PG. 26
Metalab Equipment Corp., 270 Duffy Ave., Hicksville, N. Y.
Pantatron Ltd., Metals Div., Market Bldgs., 29 Mincing Lane, London, E. C. 3, England
RAY-PROOF CORP., 513 W. 54th St., New York, N. Y. ADV. PG. 22
U. S. GASKET CO., FLUOROCARBON PRODUCTS, INC., DIV., 600 N. 10th St., Camden 1, N. J. ADV. PG. 149
Watson Mfg. Co., Inc., Jamestown, N. Y.
WELCH SCIENTIFIC CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148

TECHNICAL BOOKS—Publishers

Academic Press Co., 125 E. 23rd St., New York 10, N. Y.
Addison Wesley Press, Kendall Square, Cambridge 42, Mass
Bender & Co., Matthew, 443 Fourth Ave., New York 16, N. Y.
Blakiston Co., 1012 Walnut St., Philadelphia 5, Pa.
Boyce-Roche Book Co., 460 Bloomfield Ave., Montclair, N. J.
Dover Publications, 1780 Broadway, New York 18, N. Y.
Electronics Research Publishing Co., Inc., 480 Canal St., New York 13, N. Y.
Institute of Radio Engineers, Inc., 1 E. 79th St., New York, N. Y.
Instruments Publishing Co., 921 Ridge Ave., Pittsburgh 12, Pa.
McGRAW-HILL BOOK CO., INC., 330 W. 42nd St., New York 36, N. Y. ADV. PG. 133
Macmillan Co., The, 60 Fifth Ave., New York 11, N. Y.
Oxford University Press, 114 Fifth Ave., New York, N. Y.
Philosophical Library, 15 E. 40th St., New York, N. Y.
Prentice-Hall Inc., 70 Fifth Ave., New York, N. Y.
Reinhold Publishing Corp., 330 W. 42nd St., New York 36, N. Y.
Rider Publications Inc., John F., 480 Canal St., New York 13, N. Y.
Rinehart Books, Inc., 232 Madison Ave., New York 16, N. Y.
Sams Co., Inc., Howard W., 2201 E. 46th St., Indianapolis 5, Ind.
United Catalog Publishers, Inc., 106–110 Lafayette St., New York 13, N. Y.
Universal Scientific Co., Vincennes, Ind.
University of Chicago Press, 5750 Ellis Ave., Chicago 37, Ill.
Van Nostrand Co., Inc., D., 250 Fourth Ave., New York 3, N. Y.
Wiley & Sons Inc., John, 440 Fourth Ave., New York, N. Y.

TELEMETERING SYSTEMS—Electronic

Air Associates, Inc., Teterboro, N. J.
Applied Science Corp. of Princeton, P. O. Box 44, Princeton, N. J.
Audio Products Corp., 2265 Westwood Blvd., Los Angeles 64, Calif.
B-I-F Industries, Inc., P. O. Box 1342, Providence, R. I.
BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121
Bogue Electric Mfg. Co., 52 Iowa Ave., Paterson 3, N. J.
Bristol Co., Waterbury 20, Conn.
Brooks Rotameter Co., Box A-1347, Lansdale, Pa.
Brush Electronics Co., 3405 Perkins Ave., Cleveland 14, Ohio
Builders-Providence, Inc., Div. of B-I-F Industries, Inc., 530 Harris Ave., Providence 1, R. I.
Cinema-Television Ltd., Worsley Bridge Rd., London, E. 26, England
Communication Accessories Co., Red Bridge Rd., Hickman Hills, Mo.
Dage Electronics Div., Thompson Products, Inc., 69 N. Second St., Beech Grove, Ind.
Daystrom Instrument Co., Archbald, Pa.
Diamond Power Specialty Corp., Lancaster, Ohio
Doelcam Corp., 1400 Soldiers Field Rd., Boston 35, Mass.
DuMont Labs., Inc., Allen B., 760 Bloomfield Ave., Clifton, N. J.
Electro-Mechanical Research, Inc., 64 Main St., Ridgefield, Conn.
Epsco, Incorporated, 126 Massachusetts Ave., Boston, Mass.
Fielden Instrument Div., Robertshaw-Fulton Controls Co., 2920 N. 4th St., Philadelphia 33, Pa.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
GENERAL ELECTRIC CO., ATOMIC POWER EQUIPMENT COMPONENT, 2900 Campbell Ave., Schenectady 6, N. Y. ADV. PG. 2–6
GENERAL MILLS, INC., MECHANICAL DIV., 1620 Central Ave., N. E., Minneapolis, Minn. ADV. PG. 101
Giannini & Co., G. M., Pasadena 1, Calif.
Gulton Mfg. Corp., 212 Durham Ave., Metuchen, N. J.
Hagan Corp., 323 Fourth Ave., Pittsburgh 22, Pa.
Hammarlund Mfg. Co., 460 W. 34th St., New York 1, N. Y.
Hycon Mfg. Co., 2961 E. Colorado St., Pasadena 8, Calif.
Kybernetes Co., 1100 Raymond Blvd., Newark, N. J.
Lenkurt Electric Co., 1113 County Road, San Carlos, Calif.
Maxson Corp., W. L., 460 W. 34th St., New York 1, N. Y.
Motorola, Inc., Communications & Electronics Div., 4545 W. Augusta Blvd., Chicago 51, Ill.
Pacific Division, Bendix Aviation Corp., 11600 Sherman Way, North Hollywood, Calif.
Pantatron Ltd., Teleflex Works, High Rd., Chadwell Heath, Essex, England
Phillips Control Corp., 59 W. Washington St., Joliet, Ill.
Polarad Electronics Corp., 100 Metropolitan Ave., Brooklyn 11, N. Y.
Potter Instrument Co., 115 Cutter Mill Rd., Great Neck, N. Y.
Press Wireless Laboratories, Inc., 25 Prospect Place, West Newton 65, Mass.
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
Radio Sonic Corp., 32 W. 22nd St., New York 10, N. Y.
Sanders Associates, Inc., Nashua, N. H.
Simplex Valve & Meter Co., 68th & Upland Sts., Philadelphia 42, Pa.
Streeter-Amet Co., 4101 Ravenswood Ave., Chicago 13, Ill.
Sylvania Electric Products, Inc., 1740 Broadway, New York 19, N. Y.
Taller & Cooper Inc., 75 Front St., Brooklyn, N. Y.
Telechrome, Inc., 88 Merrick Rd., Amityville, N. Y.
Teletronics Laboratory, Inc., Kinkle St., Westbury, N. Y.
Ultrasonic Corp., 640 Memorial Drive, Cambridge 39, Mass.
Wang Laboratories, 37 Hurley St., Cambridge 41, Mass.
West Coast Electronics Co., 5873 W. Jefferson, Los Angeles 16, Calif.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.

TELETHERAPY UNITS

Atomic Energy of Canada Ltd., Commercial Products Div., P. O. Box 93, Ottawa, Ontario, Canada
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 10
Barnes Co., W. F. & John, 201 S. Water St., Rockford, Ill.
Falk & Co., Ltd., M., 5 Victoria St., London, S. W. 1, England
Panta Instruments Ltd., 26, Savage Gardens, London, E. C. 3, England
Picker X-Ray Corp., 25 South Broadway, White Plains, N. Y.
R-C SCIENTIFIC INSTRUMENT CO., 307 Culver Blvd., Playa Del Rey, Calif. ADV. PG. 132
Radium Chemical Co., 161 E. 42nd St., New York 17, N. Y.
Technical Operations, Inc., 6 Schouler Court, Arlington 74, Mass.
Western Radiation Lab., 1107 W. 24th St., Los Angeles 7, Calif.

TELEVISION SYSTEMS—Industrial

Bell Sound Systems, Inc., 555 Marion Rd., Columbus, Ohio
Cinema-Television Ltd., Worsley Bridge Rd., London, S. E. 26, England
Cossor, Ltd., 301 Windsor St., Halifax, N. S., Canada
Dage Electronics Div., Thompson Products, Inc., 69 N. Second St., Beech Grove, Ind.
Decade Instrument Co., P. O. Box 153, Caldwell, N. J.
Diamond Power Specialty Corp., Lancaster Ohio
DuMont Labs., Inc., Allen B., 760 Bloomfield Ave., Clifton, N. J.
Eastern Precision Resistor Corp., 130–11 90th Ave., Richmond Hill, N. Y.
General Precision Laboratory, Inc., Pleasantville, N. Y.
International Research Associates, 2221 Warwick Ave., Santa Monica, Calif.
Kay-Lab, Inc., 1090 Morena Blvd., San Diego 10, Calif.
Marconi Instruments, Ltd., 23 Beaver St., New York 4, N. Y
Measurement Engineering Ltd., Arnprior, Ontario, Canada
Polarad Electronics Corp., 100 Metropolitan Ave., Brooklyn 11, N. Y.

Radio Corporation of America, Engineering Products Div., Camden, N. J.
Sarkes Tarzian, Inc., 415 N. College Ave., Bloomington, Ind.
SPELLMAN TELEVISION CO., INC., 3029 Webster Ave., Bronx 67, N. Y. ADV. PG. 134
Spencer-Kennedy Labs., Inc., 186 Massachusetts Ave., Cambridge 39, Mass.
Telechrome, Inc., 88 Merrick Rd., Amityville, N. Y.
Telotronics Laboratory, Inc., Kinkle St., Westbury, N. Y.
Thordarson-Meissner Mfg. Divs., Mt. Carmel, Ill.
Trad TV Corp., 1000 First Ave., Asbury Park, N. J.

TERMINAL BOARDS

Aerovox Corp., 740 Belleville Ave., New Bedford, Mass.
Alcar Instruments, Inc., 20–21 Wagaraw Rd., Fair Lawn, N. J.
Alden Products Co., 112 N. Main St., Brockton 64, Mass.
American Lava Corp., Chattanooga 5, Tenn.
American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.
Baer Co., N. S., 9 Montgomery Ave., Hillside, N. J.
Beck's, Inc., 298–300 E. Fifth St., St. Paul 1, Minn.
Belock Instrument Corp., 13–11 111th St., College Point, N. Y.
Bennett Products Mfg. Co., Box 1055, Palo Alto, Calif.
British Electronic Sales Co., 23–03 45th Rd., Long Island City 1, N. Y.
Cambridge Thermionic Corp., 445 Concord Ave., Cambridge 38, Mass.
Connecticut Telephone & Electric Corp., 70 Brittania St., Meriden, Conn.
Continental-Diamond Fibre Co., Newark, Delaware
DeJur-Amsco Corp., 45–01 Northern Blvd., Long Island City 1, N. Y.
Electronic Associates, Inc., Long Branch, N. J.
Electronic Components, Inc., 55 E. 11th St., Paterson, N. J.
Electronic Mechanics, Inc., 101 Clifton Blvd., Clifton, N. J.
Empire Electronics Co., Inc., 166 River St., Paterson, N. J.
Garde Mfg. Co., 588 Eddy St., Providence 3, R. I.
Goldak Co., 1544 W. Glenoaks Blvd., Glendale 1, Calif.
Heldor Mfg. Corp., 238 Lewis Ave., Paterson, N. J.
Henry & Miller Industries, 45 Rockefeller Plaza, New York 20, N. Y.
Hermetic Seal Products Co., 29–37 S. 6th St., Newark 7, N. Y.
Insuline Corp. of America, 186 Granite St., Manchester, N. H.
Isolantite Mfg. Corp., Stirling, N. J.
Johns-Manville, 22 E. 40th St., New York 16, N. Y.
Kellogg Switchboard & Supply Co., 79 W. Monroe, Chicago 3, Ill.
Keystone Electronics Corp., 423 Broome St., New York 12, N. Y.
Kings Electronics Co., 40 Marbledale Rd., Tuckahoe, N. Y.
Lee Electronics Labs., Inc., 233 Dudley St., Roxbury 19, Mass.
Maxwell Rubber Products Corp., Industrial St., W., Clifton, N. J.
Measurement Engineering Ltd., Arnprior, Ontario, Canada
Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.
Mycalex Corp. of America, Clifton Blvd., Clifton, N. J.
Naer Corp., 2301 S. Purdue Ave., West Los Angeles, Calif.
P C A Electronics, Inc., 2180 Colorado Ave., Santa Monica, Calif.
Paraplegics Mfg. Co., Inc., 10068 Franklin Ave., Franklin Park, Ill.
Peschel Electronics, Inc., 13 Garden St., New Rochelle, N. Y.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
Sangamo Electric Co., Springfield, Ill.
Sealtron Corp., Reading Rd. at Amity, Cincinnati 15, Ohio
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Thordarson-Meissner Mfg. Divs., Mt. Carmel, Ill.
Tri-Point Mfg. & Development Co., 401 Grand St., Brooklyn 11, N. Y.
U. M. & F. Mfg. Corp., 10929 Vanowen St., North Hollywood, Calif.
U. S. Electronics Corp., 276 Warren St., Lyndhurst, N. J.
U. S. GASKET CO., FLUOROCARBON PRODUCTS, INC., DIV., 600 N. 10th St., Camden 1, N. J. ADV. PG. 149
Wheaton Co., T. C., Millville, N. J.

TERMINALS

Advanced Vacuum Products Inc., 22 Liberty St., Stamford, Conn.
Air Associates, Inc., Teterboro, N. J.
Alden Products Co., 112 N. Main St., Brockton 64, Mass.
American Lava Corp., Chattanooga 5, Tenn.
Bennett Products Mfg. Co., Box 1055, Palo Alto, Calif.
British Electronic Sales Co., 23–03 45th Rd., Long Island City 1, N. Y.
Cambridge Thermionic Corp., 445 Concord Ave., Cambridge 38, Mass.
Connecticut Telephone & Electric Corp., 70 Brittania St., Meriden, Conn.
Cooper-Hewitt Electric Co., 721 Grand St., Hoboken, N. J.
DeJur-Amsco Corp., 45–01 Northern Blvd., Long Island City 1, N. Y.
Electrical Industries Div. of Amperex Electronics Corp., 44 Summer Ave., Newark 4, N. J.
Electronic Components, Inc., 55 E. 11th St., Paterson, N. J.
Garde Mfg. Co., 588 Eddy St., Providence 3, R. I.
General Ceramics & Steatite Corp., 250 Crows Mill Rd., Keasbey, N. J.
Heldor Mfg. Corp., 238 Lewis Ave., Paterson, N. J.
Hermaseal Co., Inc., Riverside Drive, Elkhart, Ind.
Hermetic Seal Products Co., 29–37 South 6th St., Newark 7, N. J.
Insuline Corp. of America, 186 Granite St., Manchester, N. H.
INTERNATIONAL RESISTANCE CO., 401 N. Broad St., Philadelphia 8, Pa. ADV. PG. 7
Isolantite Mfg. Corp., Stirling, N. J.
Kellogg Switchboard & Supply Co., 79 W. Monroe, Chicago 3, Ill.
Keystone Bolt & Nut Corp., 127 Church St., New York 7, N. Y.
Keystone Electronics Corp., 423 Broome St., New York 12, N. Y.
Kings Electronics Co., 40 Marbledale Rd., Tuckahoe, N. Y.
Lee Electronics Corp., 233 Dudley St., Roxbury 19, Mass.
McCormick-Selph Associates, Box 6, Hollister, Calif.
Measurement Engineering Ltd., Arnprior, Ontario, Canada
Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.
Naer Corp., 2301 S. Purdue Ave., West Los Angeles, Calif.
Neo Sil Products Div., Rubber Associates, Inc., 850 Metropolitan Ave., Brooklyn 11, N. Y.
Sealtron Corp., Reading Rd. at Amity, Cincinnati 15, Ohio
Sphere Co., Inc., The, P. O. Box 557, Short Hills, N. J.
Stupakoff Ceramic & Mfg. Co., Latrobe, Pa.
Torwico Electronics, Inc., 975 Frelinghuysen Ave., Newark 5, N. J.
Triad Transformer Corp., 4055 Redwood Ave., Venice, Calif.
U. M. & F. Mfg. Corp., 10929 Vanowen St., North Hollywood, Calif.
U. S. Electronics Corp., 276 Warren St., Lyndhurst, N. J.
U. S. GASKET CO., FLUOROCARBON PRODUCTS, INC., DIV., 600 N. 10th St., Camden 1, N. J. ADV. PG. 149
Wheaton Co., T. C., Millville, N. J.
Winchester Electronics, Inc., Willard Road, Norwalk, Conn.
Zierick Mfg. Corp., Beechwood & Rockdale Aves., New Rochelle, N. Y.

TESTERS—Colorimetric Carbon Monoxide

Hellige, Inc., 877 Stewart Ave., Long Island City 1, N. Y.
Mine Safety Appliances Co., Braddock, Thomas & Meade Sts., Pittsburgh 8, Pa.

TESTERS—Hardness

Custom Scientific Instruments, Inc., P. O. Box 170, Arlington, N. J.
Eberbach Corp., Ann Arbor, Mich.
Ferner Co., R. Y., 110 Pleasant St., Malden, Mass.
Hellige, Inc., 877 Stewart Ave., Long Island City 1, N. Y.
Magnaflux Corp., 7300 W. Lawrence Ave., Chicago 31, Ill.
Pacific Transducer Corp., 11836 SW Pico Blvd., Los Angeles 64, Calif.
Roy Co., Milton, 1300 E. Mermaid Lane, Philadelphia 18, Pa.

TESTERS—High Megohm

Associated Research, Inc., 3788 W. Belmont, Chicago, Ill.
BENDIX AVIATION CORP., CINCINNATI DIV., 203 W. Third St., Cincinnati 2, Ohio. ADV. PG. 14
Communication Measurement Labs., Inc., 350 Leland Ave., Plainfield, N. J.
Freed Transformer Co., Inc., 1736 Weirfield St., Brooklyn 27, N. Y.
Heath Co., Benton Harbor, Mich.
Hycon Mfg. Co., 2961 E. Colorado St., Pasadena 8, Calif.
Industrial Instruments, Inc., 89 Commerce Rd., Cedar Grove, N. J.
Industrial Test Equipment Co., 55 E. 11th St., New York 3, N. Y.
Keithley Instruments, 3868 Carnegie Ave., Cleveland, Ohio
MacLeod & Hanopol, Inc., 10 Roland St., Charlestown 29, Mass.
National Pneumatic Co., Inc., & Holtzer-Cabot Divisions, 125 Amory St., Boston 19, Mass.
Peschel Electronics, Inc., 13 Garden St., New Rochelle, N. Y.
Phaostron Corp., 151 Pasadena Ave., South Pasadena, Calif.
Precise Measurements Co., 942 Kings Highway, Brooklyn 23, N. Y.
Research Electronics Laboratory, Roslyn, Pa.
Shallcross Mfg. Co., 10 Jackson Ave., Collingdale, Pa.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Sticht Co., Inc., Herman H., 27 Park Place, New York 7, N. Y.
Triplett Electrical Instrument Co., 286 Harmon Rd., Bluffton, Ohio
Winslow Co., Inc., 9 Liberty St., Newark, N. J.

TESTERS—Tube & Multimeter

American Chronoscope Corp., 316 W. First St., Mt. Vernon, N. Y.
BENDIX AVIATION CORP., CINCINNATI DIV., 203 W. Third St., Cincinnati 2, Ohio. ADV. PG. 14
Cinema-Television Ltd., Worsley Bridge Rd., London, S. E. 26, England
Cossor, Ltd., 301 Windsor St., Halifax, N. S., Canada
Electronic Instrument Co., Inc., 84 Withers St., Brooklyn 11, N. Y.
Federal Telephone & Radio Co., A Div. of International Telephone & Telegraph Corp., 100 Kingsland Rd., Clifton, N. J.
Heath Co., Benton Harbor, Mich.
Hickok Electrical Instrument Co., 10514 Dupont Ave., Cleveland 18, Ohio
Hycon Mfg. Co., 2961 E. Colorado St., Pasadena 8, Calif.
International Instruments, Inc., P. O. Box 2954, New Haven 15, Conn.
Kahn & Co., Inc., 541 Windsor St., Hartford, Conn.
Lee Electronic Labs., Inc., 233 Dudley St., Roxbury 19, Mass.
Manson Laboratories, 207 Greenwich Ave., Stamford, Conn.
Metropolitan Electronics & Instruments Co., 106 Fifth Ave., New York 11, N. Y.
Naer Corp., 2301 S. Purdue Ave., West Los Angeles, Calif.
New London Instrument Co., P. O. Box 189, New London, Conn.
Phaostron Co., 151 Pasadena Ave., South Pasadena, Calif.
Precise Development Corp., 2 Neil Court, Oceanside, N. Y.
Precision Apparatus Co., Inc., 92–27 Horace Harding Blvd., Elmhurst, N. Y.
Radio City Products Co., Inc., Centre & Glendale Sts., Easton, Pa
Radio Sonic Corp., 32 W. 22nd St., New York 10, N. Y.
Rawson Electrical Instrument Co., 114 Potter St., Cambridge 42, Mass.
Research Electronics Laboratory, Roslyn, Pa.
Sensitive Research Instrument Corp., 9 Elm Ave., Mt. Vernon, N. Y.
Simpson Electric Co., Div. of American Gage & Machine Co., 5208 W. Kinzie St., Chicago 44, Ill.
Supreme, Inc., Box MH552, Greenwood, Miss.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Triplett Electrical Instrument Co., 286 Harmon Rd., Bluffton, Ohio
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.
Weston Electrical Instrument Corp., 614 Frelinghuysen Ave., Newark 5, N. J.

TESTERS—Vacuum

CENTRAL SALES & MFG. CORP., 2 Richwood Place, Denville, N. J. ADV. PG. 140
Central Scientific Co., 1700 Irving Park Blvd., Chicago 13, Ill.
CLEGG LABORATORIES, INC., 142 S. Livingston Ave., Livingston, N. J. ADV. PG. 110
Consolidated Vacuum Corp., 1775 Mt. Read Blvd., Rochester 3, N. Y.
Eisler Engineering Co., 760 S. 13th St., Newark 3, N. J.
Electronic Instrument Co., Inc., 84 Withers St., Brooklyn 11, N. Y.
Ferranti Electric, Inc., 30 Rockefeller Plaza, New York 20, N. Y.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
High Vacuum Equipment Corp., 349 Lincoln St., Hingham, Mass.
International Radiant Corp., 40 Matinecock Ave., Port Washington, N. Y.
Measurement Engineering Ltd., Arnprior, Ontario, Canada
Metropolitan Electronics & Instruments Co., 106 Fifth Ave., New York 11, N. Y.
Naer Corp., 2301 S. Purdue Ave., West Los Angeles, Calif.
National Research Corp., 160 Charlemont St., Newton Highlands, Mass.
Research Electronics Laboratory, Roslyn, Pa.
SCIENTIFIC SPECIALTIES CORP., Snow & Union Sts., Brighton 35, Mass. ADV. PG. 138

Vacuum Tube Products, 506 S. Cleveland St., Oceanside, Calif.
WELCH SCIENTIFIC CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148
Whittington Pump & Engineering Corp., 1126 Prospect St., Indianapolis 3, Ind.

TESTERS—Voltage

Associated Research Inc., 3788 W. Belmont, Chicago, Ill.
Beta Electric Corp., 333 E. 103rd St., New York, N. Y.
Electrical Facilities, Inc., 4224 Holden St., Oakland 8, Calif.
Electronic Instrument Co., Inc., 84 Withers St., Brooklyn 11, N. Y.
Electronic Measurements Co., Inc., Lewis St. & Maple Ave., Eatontown, N. J.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Heath Co., Benton Harbor, Mich.
Hewlett-Packard Co., 395 Page Mill Rd., Palo Alto, Calif.
Hickok Electrical Instrument Co., 10514 Dupont Ave., Cleveland 18, Ohio
Hycon Mfg. Co., 2961 E. Colorado St., Pasadena 8, Calif.
Industrial Devices, Inc., 22 State Rd., Edgewater, N. J.
Industrial Instruments, Inc., 89 Commerce Rd., Cedar Grove, N. J.
Industrial Test Equipment Co., 55 E. 11th St., New York 3, N. Y.
Lee Electronic Labs., Inc., 233 Dudley St., Roxbury 19, Mass.
Metropolitan Electronics & Instruments Co., 106 Fifth Ave., New York 11, N. Y.
Naer Corp., 2301 S. Purdue Ave., West Los Angeles, Calif.
New London Instrument Co., P. O. Box 189, New London, Conn.
Peschel Electronics, Inc., 13 Garden St., New Rochelle, N. Y.
Phaostron Co., 151 Pasadena Ave., South Pasadena, Calif.
Precise Development Corp., 2 Nell Court, Oceanside, N. Y.
Precise Measurements Co., 942 Kings Highway, Brooklyn 23, N. Y.
Precision Apparatus Co., Inc., 92–27 Horace Harding Blvd., Elmhurst, N. Y.
Radio City Products Co., Inc., Centre & Glendale Sts., Easton, Pa.
Sensitive Research Instrument Corp., 9 Elm Ave., Mt. Vernon, N. Y.
Simpson Electric Co., Div. of American Gage & Machine Co., 5208 W. Kinzie St., Chicago 44, Ill.
Sticht Co., Inc., Herman H., 27 Park Place, New York 7, N. Y.
Telecomputing Corp., 133 E. Santa Anita Ave., Burbank, Calif.
Telectra Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Triplett Electrical Instrument Co., 286 Harmon Rd., Bluffton, Ohio
Waveforms, Inc., 333 Sixth Ave., New York 14, N. Y.
WELCH SCIENTIFIC CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148
Westberg Mfg. Co. 144 S. Coombs St., Napa, Calif.
Western Sound & Electric Labs., Inc., 805 S. Fifth St., Milwaukee 4, Wis.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.
Weston Electrical Instrument Corp., 614 Frelinghuysen Ave., Newark 5, N. J.

TESTING—Nondestructive

Airmec Ltd., High Wycombe, Buckinghamshire, England
Atomic Energy of Canada Ltd., Commerical Products Div., P. O. Box 93, Ottawa, Ontario, Canada
ATOMIC RESEARCH LABORATORY, 2633 Santa Monica Blvd., Santa Monica, Calif. ADV. PG. 142
Baird Associates, Inc., 33 University Rd., Cambridge 38, Mass.
Biddle Co., James G., 1316 Arch St., Philadelphia 7, Pa.
Bio-Rad Laboratories, 800 Delaware St., Berkeley, Calif.
Branson Instruments, Inc., 438 Fairfield Ave., Stamford, Conn.
Dice Co., J. W., Englewood 41, N. J.
Falk & Co., Ltd., M., 5 Victoria St., London S. W. 1, England
Freed Transformer Co., Inc., 1736 Weirfield St., Brooklyn 27, N. Y.
Gulton Mfg. Corp., 212 Durham Ave., Metuchen, N. J.
International Radiant Corp., 40 Matinecock Ave., Port Washington, N. Y.
Magnaflux Corp., 7300 W. Lawrence Ave., Chicago 31, Ill.
North American Philips Co., Inc., 750 S. Fulton Ave., Mt. Vernon, N. Y.
Nuclear Research Corp., Southampton, Pa.
Peschel Electronics, Inc., 13 Garden St., New Rochelle, N. Y.
Photocon Research Products, 421 N. Foothill Blvd., Pasadena 7, Calif.
Radioactive Products, Inc., 540 W. Congress St., Detroit 26, Mich.
St. John X-Ray Laboratory, Califon, N. J.
Technical Operations, Inc., 6 Schouler Court, Arlington 74, Mass.
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23

THERMISTORS

Breeze Corporations, Inc., 700 Liberty Ave., Union, N. J.
Carbolay Dept. of General Electric Co., 11139 E. Eight Mile Blvd., Detroit 32, Mich.
Carborundum Co., Globar Div., Niagara Falls, N. Y.
Friez Instrument Div. of Bendix Aviation Corp., 1454 Taylor Ave., Baltimore 4, Md.
General Controls Co., Glendale 1, Calif.
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
Glenco Corp., Metuchen, N. J.
Kahl Scientific Instrument Corp., P. O. Box 1166, El Cajon, Calif.
Keystone Carbon Co., Inc., Saint Marys, Pa.
Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.
Micro-Circuits Co., New Buffalo, Mich.
Narda Corp., The, 66 Main St., Mineola, N. Y.
Servo Corp. of America, 2020 Jericho Turnpike, New Hyde Park, N. Y.
Sperry Gyroscope Co., Great Neck, N. Y.
Sprague Electric Co., North Adams, Mass.
Stupakoff Ceramic & Mfg. Co., Latrobe, Pa.
Thermistor Corp. of America, Durham Ave., Metuchen, N. J.
Victory Engineering Corp., Springfield Rd., Union, N. J.
Yellow Springs Instrument Co., Inc., P. O. Box 106, Yellow Springs, Ohio

THERMOCOUPLES

AERO RESEARCH INSTRUMENT CO., 1901 N. Hermitage Ave., Chicago 22, Ill. ADV. PG. 114
Air Associates, Inc., Teterboro, N. J.
American Thermo Electric Co., 198–11 Hollis Ave., Hollis 12, N. Y.
Assembly Products, Inc., Chagrin Falls 6, Ohio
Baker & Co., Inc., 113 Astor St., Newark 5, N. J.
Beam Instruments Corp., 350 Fifth Ave., New York 1, N. Y.
Biddle Co., James G., 1316 Arch St., Philadelphia 7, Pa.
Bristol Co., Waterbury 20, Conn.
Dallons Laboratories, Inc., 5066 Santa Monica Blvd., Los Angeles, Calif.
Engelhard, Inc., Charles, 850 Passaic St., East Newark, N. J.
Engineering Corp. of America, 201 Grove St., Westfield, N. J.
Farrand Optical Co., Inc., Bronx Blvd. at E. 238th St., New York 70, N. Y.
Fenwal, Inc., Ashland, Mass.
Fielden Instrument Div., Robertshaw-Fulton Controls Co., 2920 N. 4th St., Philadelphia 33, Pa.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Fredericks Co., George E., Bethayres, Pa.
General Controls Co., Glendale 1, Calif.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Industrial Controls, Inc., 525 N. Noble St., Chicago 22, Ill.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 131
LEIGHTON LABS., H. W., 26 Herman St., Glen Ridge, N. J. ADV. PG. 124
Leland Instruments, Ltd., 22–23 Millbank, Westminster, S. W. 1, London, England
Measurement Engineering Ltd., Arnprior, Ontario, Canada
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave. S., Minneapolis, Minn.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa ADV. PG. Back Cover
Perkin-Elmer Corp., Norwalk, Conn.
Precision Tube Co. Inc., North Wales, Pa.
Pyrometer Instrument Co., Inc., Bergenfield, N. J.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
Rawson Electrical Instrument Co., 114 Potter St., Cambridge 42, Mass.
Richards Co., Inc., Arklay S., 12 Winchester St., Newton Highlands 61, Mass.
Sensitive Research Instrument Corp., 9 Elm Ave., Mt. Vernon, N. Y.
Sperry Gyroscope Co., Great Neck, N. Y.
Telectra Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Thwing-Albert Instrument Co., Penn St. & Pulaski Ave., Philadelphia 44, Pa.
Vacuum Tube Products, 506 S. Cleveland St., Oceanside, Calif.
West Instrument Corp., 525 N. Noble St., Chicago 22, Ill.
Western Gold & Platinum Works, 589 Bryant St., San Francisco, Calif.
Weston Electrical Instrument Corp., 614 Frelinghuysen Ave., Newark 5, N. J.
Wheelco Instruments Div., Barber-Colman Co., Rockford, Ill.
Winslow Co., Inc., 9 Liberty St., Newark, N. J.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

THERMOMETERS—Laboratory

Central Scientific Co., 1700 Irving Park Blvd., Chicago 13, Ill.
Cooper Co., D. C., 1467 S. Michigan Ave., Chicago, Ill.
Federal Telephone & Radio Co., A Div. of International Telephone & Telegraph Corp., 100 Kingsland Rd., Clifton, N. J.
Fish-Schurman Corp., 70 Portman Rd., New Rochelle, N. Y.
Fisher Scientific Co., 709 Forbes Ave., Pittsburgh 19, Pa.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Greiner Co., Emil, 26 N. Moore St., New York 13, N. Y.
Hill & Co., E. Vernon, P. O. Box 189, Lake Geneva, Wis.
Kahl Scientific Instrument Corp., P. O. Box 1166, El Cajon, Calif.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 131
Meditronic Instruments, 4867 Fountain Ave., Hollywood 29, Calif.
Moeller Instrument Co., 132nd St. & 89th Ave., Richmond Hill 18, N. Y.
Nurnberg Thermometer Co., Inc., 124 Livingston St., Brooklyn 2, N. Y.
Pacific Transducer Corp., 11836 SW Pico Blvd., Los Angeles 64, Calif.
Perkin-Elmer Corp., Norwalk, Conn.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Rascher & Betzold, Inc., 730 N. Franklin St., Chicago 10, Ill.
Scientific Glass Apparatus Co., Inc., 100 Lakewood Terrace, Bloomfield, N. J.
Special Glass Products Co., 10 W. 33rd St., New York 1, N. Y.
Taylor Instrument Companies, 95 Ames St., Rochester, N. Y.
Weksler Thermometer Corp., Martinique Bldg., 49 W. 32nd St., New York 1, N. Y.
Weston Electrical Instrument Corp., 614 Frelinghuysen Ave., Newark 5, N. J.
Yellow Springs Instrument Co., Inc., P. O. Box 106, Yellow Springs, Ohio

THERMOPILES—Neutron Sensitive

LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 131

TILE—Asphalt

Armstrong Cork Co., 1010 Concord St., Lancaster, Pa.
Beck & Sons, Inc., 256 Mott St., New York 12, N. Y.
Johns-Manville, 22 E. 40th St., New York 16, N. Y.

TILE—Ceramic

See FLOORING, Acid-Proof.

TILE—Plastic

Armstrong Cork Co., 1010 Concord St., Lancaster, Pa.
Beck & Sons, Inc., 256 Mott St., New York 12, N. Y.
Gits Molding Corp., 4600 W. Huron St., Chicago 44, Ill.
Goodyear Tire & Rubber Co., Akron, Ohio
Johns-Manville, 22 E. 40th St., New York 16, N. Y.
U. S. Stoneware Co., Akron 9, Ohio

TILE—Rubber

Armstrong Cork Co., 1010 Concord St., Lancaster, Pa.
Beck & Sons, Inc., 256 Mott St., New York 12, N. Y.
Goodyear Tire & Rubber Co., Akron, Ohio
Maxwell Rubber Products Corp., Industrial St., W., Clifton, N. J.

TIMERS—Automatic Reset

ATOMIC INSTRUMENT CO., 84 Massachusetts Ave., Cambridge 39, Mass. ADV. PG. Inside Back Cover
Automatic Temperature Control Co., Inc., 5206 Pulaski Ave., Philadelphia 44, Pa.
BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121
Bill Jack Scientific Instrument Co., P. O. Box C-39, Solana Beach, Calif.
Bristol Co., Waterbury 20, Conn.
Cinema-Television Ltd., Worsley Bridge Rd., London, S. E. 26, England
Clary Multiplier Corp., 408 Junipero St., San Gabriel, Calif.

Cramer Co., Inc., The, R. W., Box 13, Centerbrook, Conn.
Cutler-Hammer, Inc., 412 N. 12th St., Milwaukee 1, Wis.
Dietz Co., Henry G., 12–16 Astoria Blvd., Long Island 2, N. Y.
Eagle Signal Corp., 202 20th St., Moline, Ill.
Electrical & Physical Instrument Corp., 42–19 27th St., Long Island City 1, N. Y.
Farmer Electric Co., 21 Mossfield Rd., Waban 68, Mass.
FORD INSTRUMENT CO., DIV. OF SPERRY CORP., 31–10 Thomson Ave., Long Island City, N. Y. ADV. PG. 105
General Communication Co., 681 Beacon St., Boston 15, Mass.
General Controls Co., Glendale 1, Calif.
Haydon Mfg. Co., Inc., 2400 Elm St., Torrington, Conn.
Industrial Timer Corp., 131 Ogden St., Newark 4, N. J.
International Register Co., 2620 W. Washington Blvd., Chicago 12, Ill.
J-B-T Instruments, Inc., 441 Chapel St., New Haven 8, Conn.
Lektra Laboratories, 154 Eleventh Ave., New York 11, N. Y.
Lumenite Electric Co., 407 S. Dearborn St., Chicago 5, Ill.
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave. S., Minneapolis, Minn.
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
NUCLEAR INSTRUMENT & CHEMICAL CORP., 229 W. Erie St., Chicago 10, Ill. ADV. PG. 137
Paragon Electric Co., Two Rivers, Wis.
Partlow Corp., 2 Campion Rd., New Hartford, N. Y.
Potter Instrument Co., 115 Cutter Mill Rd., Great Neck, N. Y.
Professional Instrument Corp., 149 Broadway, New York 6, N. Y.
Special Instruments Laboratory, Inc., 1003 Highland Ave., Knoxville, Tenn.
Streeter-Amet Co., 4101 Ravenswood Ave., Chicago 13, Ill.
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
Vacuum Tube Products, 506 S. Cleveland St., Oceanside, Calif.
Weltronic Co., 19500 W. Eight Mile Rd., Detroit 19, Mich.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.
Yonkers Laboratory Supply Co., Palisade Ave., Yonkers 2, N. Y.

TIMERS—Chronoscope

American Chronoscope Corp., 316 W. First St., Mt. Vernon, N. Y.
Cinema-Television Ltd., Worsley Bridge Rd., London, S. E. 26, England
Sangamo Electric Co., Springfield, Ill.
Standard Electric Time Co., 89 Logan St., Springfield, Mass.
Sticht Co., Inc., Herman H., 27 Park Place, New York 7, N. Y.
TECHNICAL MEASUREMENT CORP., 140–142 State St., New Haven, Conn. ADV. PG. 128
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.

TIMERS—Electric

Ace Glass, Inc., Vineland, N. J.
Alden Electronics & Impulse Recording Equipment Co., Westboro, Mass.
Atomlab, Inc., 489 Fifth Ave., New York 17, N. Y.
Automatic Temperature Control Co., Inc., 5206 Pulaski Ave., Philadelphia 44, Pa.
Bristol Co., Waterbury 20, Conn.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Clary Multiplier Corp., 408 Junipero St., San Gabriel, Calif.
Cooper Co., D. C., 1467 S. Michigan Ave., Chicago, Ill.
Cramer Co., Inc., The, R. W., Box 13, Centerbrook, Conn.
Cutler-Hammer, Inc., 412 N. 12th St., Milwaukee 1, Wis.
DeJur-Amsco Corp., 45–01 Northern Blvd., Long Island City 1, N. Y.
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV PG. 147
Dietz Co., Henry G., 12–16 Astoria Blvd., Long Island City 2, N. Y.
Eagle Signal Corp., 202 20th St., Moline, Ill.
Eisler Engineering Co., 760 S. 13th St., Newark 3, N. J.
Electronic Associates, Inc., Long Branch, N. J.
Electronic Control Corp., 1573 E. Forest, Detroit 7, Mich.
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
FORD INSTRUMENT CO., DIV. OF SPERRY CORP., 31–10 Thomson Ave., Long Island City, N. Y. ADV. PG 105
G-V Controls, Inc., 28 Hollywood Plaza, East Orange, N. J.
General Control Company, 1200 Soldiers Field Rd., Boston 34, Mass.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Haydon Mfg. Co., Inc., 2400 Elm St., Torrington, Conn.
Industrial Timer Corp., 131 Ogden St., Newark 4, N. J.
International Register Co., 2620 W. Washington Blvd., Chicago 12, Ill.
Johnson Service Co., 507 E. Michigan St., Milwaukee 2, Wis.
Labline, Inc., 217 N. Desplaines St., Chicago 6, Ill.
Larson Instrument Co., 24 Orchard St., Tarrytown, N. Y.
Liebel-Flarsheim Co., 111 E. Amity, Rd., Cincinnati 15, Ohio
Lumenite Electric Co., 407 S. Dearborn St., Chicago 5, Ill.
Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.
Marion Electrical Instrument Co., 402 Canal St., Manchester, N. H.
Minneapolis-Honeywell Regulator Co., 2573 Fourth Ave. S., Minneapolis, Minn.
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
NUCLEAR INSTRUMENT & CHEMICAL CORP., 229 W. Erie St., Chicago 10, Ill. ADV. PG. 137
P S C Applied Research Ltd., 1500 O'Connor Drive, Toronto 16, Ontario, Canada
Paragon Electric Co., Two Rivers, Wis.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Professional Instrument Corp., 149 Broadway, New York 6, N. Y.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
Sangamo Electric Co., Springfield, Ill.
Sessions Clock Co., Industrial Products Div., Forestville, Conn.
Standard Electric Time Co., 89 Logan St., Springfield, Mass.
Struthers-Dunn Inc., Lamb's Rd., Pitman, N. J.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Tork Clock Co., Inc., Mount Vernon, N. Y.
Trott Electronics Co., 1944 Clinton Ave., N., Rochester 21, N. Y.
Weltronic Co., 19500 W. Eight Mile Rd., Detroit 19, Mich.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.

TIMERS—Electronic

Air Associates, Inc., Teterboro, N. J.
Alden Electronics & Impulse Recording Equipment Co., Westboro, Mass.
ALLEN-BRADLEY CO., 136 W. Greenfield Ave., Milwaukee 4, Wis. ADV. PG. 113
American Chronoscope Corp., 316 W. First St., Mount Vernon, N. Y.
American Electronic Laboratories, Inc., 641 Arch St., Philadelphia 6, Pa.
ATOMIC INSTRUMENT CO., 84 Massachusetts Ave., Cambridge 39, Mass. ADV. PG. Inside Back Cover
Automatic Temperature Control Co., Inc., 5206 Pulaski Ave., Philadelphia 44, Pa.
Autotron Co., Box 722, Danville, Ill.
BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121
Bill Jack Scientific Instrument Co., P. O. Box C-39, Solana Beach, Calif.
Bristol Co., Waterbury 20, Conn.
Cinema-Television Ltd., Worsley Bridge Rd., London, S. E. 26, England
Clark Controller Co., 1146 E. 152nd St., Cleveland 10, Ohio
Cutler-Hammer, Inc., 412 N. 12th St., Milwaukee 1, Wis.
Daystrom Instrument Co., Archbald, Pa.
Detectron Corp., 5420 Vineland Ave., North Hollywood, Calif.
Eisler Engineering Co., 760 S. 13th St., Newark 3, N. J.
EKCO ELECTRONICS LTD., EKCO WORKS, Southend-on-Sea, Essex, England. ADV. PG. 127
Electrical & Physical Instrument Corp., 42–19 27th St., Long Island City 1, N. Y.
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
Farmer Electric Co., 21 Mossfield Rd., Waban 68, Mass.
FORD INSTRUMENT CO., DIV. OF SPERRY CORP., 31–10 Thomson Ave., Long Island City, N. Y. ADV. PG. 105
General Control Company, 1200 Soldiers Field Rd., Boston 34, Mass.
General Controls Co., Glendale 1, Calif.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Hewlett-Packard Co., 395 Page Mill Rd., Palo Alto, Calif.
Hycon Mfg. Co., 2961 E. Colorado St., Pasadena 8, Calif.
Industrial Science, 63–15 Forest Ave., Ridgewood 27, N. Y.
Kearfott Co., Inc., 14844 Oxnard St., Van Nuys, Calif.
Larson Instrument Co., 24 Orchard St., Tarrytown, N. Y.
Lektra Laboratories, 154 Eleventh Ave., New York 11, N. Y.
Leland Instruments Ltd., 22–23 Millbank, Westminster, S. W. 1, London, England
Lumenite Electric Co., 407 S. Dearborn St., Chicago 5, Ill.
Marconi Instruments Ltd., 23 Beaver St., New York 4, N. Y.
Noer Corp., 2301 S. Purdue Ave., West Los Angeles, Calif.
North American Philips Co., Inc., 750 S. Fulton Ave., Mt. Vernon, N. Y.
Paraplegics Mfg. Inc., 10068 Franklin Ave., Franklin Park, Ill.
Peschel Electronics, Inc., 13 Garden St., New Rochelle, N. Y.
Photobell Co., 116 Nassau St., New York 7, N. Y.
Photoswitch Div., Electronic Corp. of America, 77 Broadway, Cambridge 42, Mass.
Potter Instrument Co., 115 Cutter Mill Rd., Great Neck, N. Y.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
Research Electronics Laboratory, Roslyn, Pa.
Rutherford Electronics Corp., 3707 S. Robertson Blvd., Culver City, Calif.
Standard Electric Time Co., 89 Logan St., Springfield, Mass.
Standard Electronics Research Corp., 2 East End Ave., New York 21, N. Y.
Sticht Co., Inc., Herman H., 27 Park Place, New York 7, N. Y.
Streeter-Amet Co., 4101 Ravenswood Ave., Chicago 13, Ill.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Teletronics Laboratory, Inc., Kinkle St., Westbury, N. Y.
Trott Electronics Co., 1944 Clinton Ave., N., Rochester 21, N. Y.
Ultrasonic Corp., 640 Memorial Drive, Cambridge 39, Mass.
Vacuum Tube Products, 506 S. Cleveland St., Oceanside, Calif.
Wolkirt Co., 145 W. Hazel, Inglewood, Calif.
Wang Laboratories, 37 Hurley St., Cambridge 41, Mass.
Weltronic Co., 19500 W. Eight Mile Rd., Detroit 19, Mich.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.
Wilson & Co., G. C., 1950 W. Eighth Ave., Huntington, W. Va.
Yellow Springs Instrument Co., Inc., P. O. Box 106, Yellow Springs, Ohio

TIMERS—Precision

Air Associates, Inc., Teterboro, N. J.
American Chronoscope Corp., 316 W. First St., Mount Vernon, N. Y.
Atomlab, Inc., 489 Fifth Ave., New York 17, N. Y.
Automatic Temperature Control Co., Inc., 5206 Pulaski Ave., Philadelphia 44, Pa.
Belock Instrument Corp., 13–11 111th St., College Point, N. Y.
BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121
Bristol Co., Waterbury 20, Conn.
Cinema-Television Ltd., Worsley Bridge Rd., London, S. E. 26, England
Cramer Co., Inc., The, R. W., Box 12, Centerbrook, Conn.
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
Detectron Corp., 5420 Vineland Ave., North Hollywood, Calif.
Electronic Associates, Inc., Long Branch, N. J.
FORD INSTRUMENT CO., DIV. OF SPERRY CORP., 31–10 Thomson Ave., Long Island City, N. Y. ADV. PG. 105
General Control Company, 1200 Soldiers Field Rd., Boston 34, Mass.
GENERAL MILLS, INC., MECHANICAL DIV., 1620 Central Ave., N. E., Minneapolis, Minn. ADV. PG. 101
Haydon Mfg. Co., Inc., 2400 Elm St., Torrington, Conn.
Hewlett-Packard Co., 395 Page Mill Rd., Palo Alto, Calif.
Hycon Mfg. Co., 2961 E. Colorado St., Pasadena 8, Calif.
Industrial Timer Corp., 131 Ogden St., Newark 4, N. J.
Liebel-Flarsheim Co., 111 E. Amity Rd., Cincinnati 15, Ohio
Lumenite Electric Co., 407 S. Dearborn St., Chicago 5, Ill.
NRD INSTRUMENT CO. 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
Potter Instrument Co., 115 Cutter Mill Rd., Great Neck, N. Y.
Professional Instrument Corp., 149 Broadway, New York 6, N. Y.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143

Rutherford Electronics Corp., 3707 S. Robertson Blvd., Culver City, Calif.
Standard Electric Time Co., 89 Logan St., Springfield, Mass.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Tork Clock Co., Inc., Mount Vernon, N. Y.
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
Wang Laboratories, 37 Hurley St., Cambridge 41, Mass.
Weltronic Co., 19500 W. Eight Mile Rd., Detroit 19, Mich.
Yellow Springs Instrument Co., Inc., P. O. Box 106, Yellow Springs, Ohio
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

TIMERS—Printing Interval

Baldwin Instrument Co., Ltd., Brooklands Works, Dartford, Kent, England
Bristol Co., Waterbury 20, Conn.
Clary Multiplier Corp., 408 Junipero St., San Gabriel, Calif.
Detectron Corp., 5420 Vineland Ave., North Hollywood, Calif.
Industrial Timer Corp., 131 Ogden St., Newark 4, N. J.
Lumenite Electric Co., 407 S. Dearborn St., Chicago 5, Ill.
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 147
NUCLEAR INSTRUMENT & CHEMICAL CORP., 229 W. Erie St., Chicago 10, Ill. ADV. PG. 137
PSC Applied Research Ltd., 1500 O'Connor Drive, Toronto 16, Ontario, Canada
Potter Instrument Co., 115 Cutter Mill Rd., Great Neck, N. Y.
Professional Instrument Corp., 149 Broadway, New York 6, N. Y.
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
Special Instruments Laboratory, Inc., 1003 Highland Ave., Knoxville, Tenn.
Streeter-Amet Co., 4101 Ravenswood Ave., Chicago 13, Ill.
Taller & Cooper Inc., 75 Front St., Brooklyn, N. Y.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Tork Clock Co., Inc., Mount Vernon, N. Y.
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

TITRATORS

Ace Glass, Inc., Vineland, N. J.
Beckman Instruments., Inc., 820 Mission St., South Pasadena 183, Calif.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Fisher Scientific Co., 709 Forbes Ave., Pittsburgh 19, Pa.
Hellige, Inc., 877 Stewart Ave., Long Island City 1, N. Y.
Langevin Mfg. Corp., 37 W. 65th St., New York 23, N. Y.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Sargent & Co., E. H., 4647 W. Foster Ave., Chicago 30, Ill.
Scientific Glass Apparatus Co., Inc., 100 Lakewood Terrace, Bloomfield, N. J.
Wakefield Industries, Inc., 5108 Grove St., Skokie, Ill.
Wilkens-Anderson Co., 4525 W. Division St., Chicago 51, Ill.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

TRANSFORMERS—Audio

Aircraft Transformer Corp., West & Willow Aves., Long Branch, N. J.
Airpax Products Co., Middle River, Baltimore 20, Md.
Amplifier Corp. of America, 396 Broadway, New York 13, N. Y.
Atlas Coil, Inc., Cottage St., Derby, Conn.
Atlas Engineering Co., 3 Edgewood St., Roxbury, Mass.
Bogen Co., Inc., David, 29 Ninth Ave., New York 14, N. Y.
Central Transformer Co., 910 W. Jackson Ave., Chicago, Ill.
Chicago Standard Ttransformer Corp., Addison & Elston, Chicago 18, Ill.
Dietz Designs & Mfg. Co., Grandview 6, Mo.
Elm Laboratories, 18 South Broadway, Dobbs Ferry, N. Y.
Ferranti Electric, Inc., 30 Rockefeller Plaza, New York 20, N. Y.
Fisher Engineering, Inc., 2060 U. S. 24 East, P. O. Box 327, Huntington, Ind.
Freed Transformer Co., Inc., 1736 Weirfield St., Brooklyn 27, N. Y.
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
Gramer-Halldorson Transformer Corp., 2734 N. Pulaski Rd., Chicago 39, Ill.
Grand Transformers, Inc., Grand Haven, Mich.
Hevi Duty Electric Co., 4212 W. Highland Blvd., Milwaukee 1, Wis.
Highland Engineering Co., Westbury, N. Y.
Industrial Specialties Corp., 323 Atlantic Ave., Brooklyn 1, N. Y.
Industrial Transformer Corp., Gouldsboro, Pa.
Infra Electronic Corp., Roseland, N. J.
Interelectronics Corp., 2432 Grand Concourse, New York 58, N. Y.
James Vibrapowr Co., 4036 N. Rockwell St., Chicago 18, Ill.
K-V Transformer Co., 20 E. Franklin St., Danbury, Conn.
Kahn & Co., Inc., 541 Windsor St., Hartford, Conn.
Kellogg Switchboard & Supply Co., 79 W. Monroe, Chicago 3, Ill.
Kenyon Transformer Co., Inc., 840 Barry St., New York 59, N. Y.
Laboratory for Electronics, Inc., 75 Pitts St., Boston 14, Mass.
Leonard Electric Products Co., Inc., 67 34th St., Brooklyn 32, N. Y.
Leso, Via Bergamo 21, Milan, Italy
McIntosh Lab., Inc., 320 Water St., Binghamton, N. Y.
Magnavox Co., Components Div., Fort Wayne 4, Ind.
Miller Instruments, Inc., William, 325 N. Halstead Ave., Pasadena 8, Calif.
Milwaukee Transformer Co., 5231 N. Hopkins St., Milwaukee 9, Wis.
Moloney Electric Co., 5390 Bircher Blvd., St. Louis 20, Mo.
Muirhead & Co., Ltd., Beckenham, Kent, England
New London Instrument Co., P. O. Box 189, New London, Conn.
New York Transformer Co., Inc., Third Ave., Alpha, N. J.
Ortho Filter Corp., 198 Albion Ave., Paterson 2, N. J.
Oxford Electric Corp., 3911 S. Michigan Ave., Chicago 15, Ill.
Pacific Transducer Corp., 11836 SW Pico Blvd., Los Angeles 64, Calif.
Perkin Engineering Corp., 345 Kansas St., El Segundo, Calif.
Permoflux Corp., 4900 W. Grand Ave., Chicago 39, Ill.
Power Transformer Co., Inc., 532 Mulberry St., Newark 5, N. J.
Radio Corporation of America, Engineering Products Div., Camden, N. J.
RADIO CORPORATION OF AMERICA, TUBE DIV., Harrison, N. J. ADV. PG. 19
Raypar, Inc., 7800 W. Addison St., Chicago 7, Ill.
Raytheon Mfg. Co., Equipment Operations, Waltham 54, Mass.
Sangamo Electric Co., Springfield, Ill.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Sterling Transformer Corp., 297 N. Seventh St., Brooklyn 11, N. Y.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Texas Instruments, Inc., 6000 Lemmon Ave., Dallas 9, Texas
Thordarson-Meissner Mfg. Divs., Mt. Carmel, Ill.
Torocoil Co., 1374 Mobile Court, St. Louis, Mo.
Torwico Electronics, Inc., 975 Frelinghuysen Ave., Newark 5, N. J.
Transformers, Inc., 532 North St., Endicott, N. Y.
Transonic, Inc., 808 Sixteenth St., Box 96A, Bakersfield, Calif.
Tresco, 3824 Terrace St., Philadelphia 28, Pa.
Triad Transformer Corp., 4055 Redwood Ave., Venice, Calif.
U. S. Electronics Corp., 276 Warren St., Lyndhurst, N. J.
United Transformer Co., 150 Varick St., New York 13, N. Y.
Utah Radio Products, Inc., 1123 Franklin Rd., Huntington, Ind.
Varo Mfg. Co., Inc., 1801 Walnut St., Garland, Texas
Wheeler Insulated Wire Co., Inc., 150 E. Aurora St., Waterbury 91, Conn.

TRANSFORMERS—Constant Voltage

Acme Electric Corp., 31 Water St., Cuba, N. Y.
Aircraft Transformer Corp., West & Willow Aves., Long Branch, N. J.
Airdesign Inc., 241 Fairfield Ave., Upper Darby, Pa.
Airpax Products Co., Middle River, Baltimore 20, Md.
Amplifier Corp. of America, 396 Broadway, New York 13, N. Y.
Atlas Coil, Inc., Cottage St., Derby, Conn.
Calco Constantine Engineering Labs., Co., Island Ave., Mahwah, N. J.
Eisler Engineering Co., 760 S. 13th St., Newark 3, N. J.
Federal Telephone & Radio Co., A Div. of International Telephone & Telegraph Corp., 100 Kingsland Rd., Clifton, N. J.
Ferranti Electric, Inc., 30 Rockefeller Plaza, New York 20, N. Y.
Gramer-Halldorson Transformer Corp., 2734 N. Pulaski Rd., Chicago 39, Ill.
Industrial Specialties Corp., 323 Atlantic Ave., Brooklyn 1, N. Y.
Infra Electronic Corp., Roseland, N. J.
Jobbins Electronic Enterprises, Menlo Park, Calif.
K-V Transformer Co., 20 E. Franklin St., Danbury, Conn.
Kellogg Switchboard & Supply Co., 79 W. Monroe, Chicago 3, Ill.
Laboratory for Electronics, Inc., 75 Pitts St., Boston 14, Mass.
Magnetic Research Corp., 200 E. Center St., El Segundo, Calif.
Miller Instruments, Inc., William, 325 N. Halstead Ave., Pasadena 8, Calif.
New London Instrument Co., P. O. Box 189, New London, Conn.
Ortho Filter Corp., 198 Albion Ave., Paterson 2, N. J.
Perkin Engineering Corp., 345 Kansas St., El Segundo, Calif.
Power Transformer Co., Inc., 532 Mulberry St., Newark 5, N. J.
Raypar, Inc., 7800 W. Addison St., Chicago, Ill.
Raytheon Mfg. Co., Equipment Operations, Waltham 54, Mass.
Sangamo Electric Co., Springfield, Ill.
Sola Electric Co., 4633 W. 16th St., Chicago 50, Ill.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Thordarson-Meissner Mfg. Divs., Mt. Carmel, Ill.
Transformer Specialty Co., Bala Cynwyd, Pa.
Transformers, Inc., 532 North St., Endicott, N. Y.
Transonic, Inc., 808 Sixteenth St., Box 96A, Bakersfield, Calif.
Tresco, 3824 Terrace St., Philadelphia 28, Pa.
U. S. Electronics Corp., 276 Warren St., Lyndhurst, N. J.
United Transformer Co., 150 Varick St., New York 13, N. Y.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

TRANSFORMERS—Power

Acme Electric Corp., 31 Water St., Cuba, N. Y.
Aircraft Transformer Corp., West & Willow Aves., Long Branch, N. J.
Airpax Products Co., Middle River, Baltimore 20, Md.
Amplifier Corp. of America, 396 Broadway, New York 13, N. Y.
Atlas Coil, Inc., Cottage St., Derby, Conn.
Atlas Engineering Co., 3 Edgewood St., Roxbury, Mass.
Bogen Co., Inc., David, 29 Ninth Ave., New York 14, N. Y.
Central Transformer Co., 910 W. Jackson Ave., Chicago, Ill.
Chicago Standard Transformer Corp., Addison & Elston, Chicago 18, Ill.
Comar Electric Co., 3349 W. Addison St., Chicago 18, Ill.
Dietz Design & Mfg. Co., Grandview 6, Mo.
Electrical Facilites, Inc., 4224 Holden St., Oakland 8, Calif.
Epsco, Incorporated, 126 Massachusetts Ave., Boston, Mass.
Ferranti Electric, Inc., 30 Rockefeller Plaza, New York 20, N. Y.
Fisher Engineering, Inc., 2060 U. S. 24 East, P. O. Box 327, Huntington, Ind.
Freed Transformer Co., Inc., 1736 Weirfield St., Brooklyn 27, N. Y.
General Controls Co., Glendale 1, Calif.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Gramer-Halldorson Transformer Corp., 2734 N. Pulaski Rd., Chicago 39, Ill.
Grand Transformers, Inc., Grand Haven, Mich.
Hevi Duty Electric Co., 4212 W. Highland Blvd., Milwaukee 1, Wis.
Highland Engineering Co., Westbury, N. Y.
I-T-E Circuit Breaker Co., 19th & Hamilton Sts., Philadelphia 30, Pa.
Industrial Specialties Corp., 323 Atlantic Ave., Brooklyn 1, N. Y.
Industrial Transformer Corp., Gouldsboro, Pa.
Infra Electronic Corp., Roseland, N. J.
James Vibrapowr Co., 4036 N. Rockwell St., Chicago 18, Ill.
K-V Transformer Co., 20 E. Franklin St., Danbury, Conn.
Kellogg Switchboard & Supply Co., 79 W. Monroe, Chicago 3, Ill.
Kenyon Transformer Co., Inc., 840 Barry St., New York 59, N. Y.
Laboratory for Electronics, Inc., 75 Pitts St., Boston 14, Mass.
Langevin Mfg. Corp., 37 W. 65th St., New York 23, N. Y.
Leonard Electric Products Co., Inc., 67 34th St., Brooklyn 32, N. Y.
Magnatran, Inc., 248 Schuyler Ave., Kearny, N. J.
Magnetic Amplifiers, Inc., 632 Tinton Ave., New York 55, N. Y.
Magnetic Research Corp., 200 E. Center St., El Segundo, Calif.

Miller Instruments, Inc., William, 325 N. Halstead Ave., Pasadena 8, Calif.
Milwaukee Transformer Co., 5231 N. Hopkins St., Milwaukee 9 Wis
Maloney Electric Co., 5390 Bircher Blvd., St. Louis 20, Mo.
New London Instrument Co., P. O. Box 189, New London, Conn.
New York Transformer Co., Inc., Third Ave., Alpha, N. J.
Ortho Filter Corp., 198 Albion Ave., Paterson 2, N. J.
Perkin Engineering Corp., 345 Kansas St., El Segundo, Calif.
Permaflux Corp., 4900 W. Grand Ave., Chicago 39, Ill.
Power Transformer Co., Inc., 532 Mulberry St., Newark 5, N. J.
Radio Corporation of America, Engineering Products Div., Camden, N. J.
RADIO CORPORATION OF AMERICA, TUBE DIV., Harrison, N. J. ADV. PG. 19
RAPID ELECTRIC CO., 2881 Middletown Rd., New York, N. Y. ADV. PG. 124
Raypar, Inc., 7800 W. Addison St., Chicago, Ill.
Raytheon Mfg. Co., Equipment Operations, Waltham 54, Mass.
Sangamo Electric Co., Springfield, Ill.
Sola Electric Co., 4633 W. 16th St., Chicago 50, Ill.
Sorgel Electric Co., 838 National Ave., Milwaukee 4, Wis.
Specialties, Inc., Skunks Misery Rd., Syosset, N. Y.
Square Root Mfg. Corp., 391 Saw Mill River Rd., Yonkers, N. Y.
Sterling Transformer Corp., 297 N. Seventh St., Brooklyn 11, N. Y.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Texas Instruments, Inc., 6000 Lemmon Ave., Dallas 9, Texas
Thordarson-Meissner Mfg. Divs., Mt. Carmel, Ill.
Transformers, Inc., 532 North St., Endicott, N. Y.
Transonic, Inc., 808 Sixteenth St., Box 96A, Bakersfield, Calif.
Tresco, 3824 Terrace St., Philadelphia 28, Pa.
Triad Transformer Corp., 4055 Redwood Ave., Venice, Calif.
U. S. Electronics Corp., 276 Warren St., Lyndhurst, N. J.
United Transformer Co., 150 Varick St., New York 13, N. Y.
Utah Radio Products, Inc., 1123 Franklin Rd., Huntington, Ind.
Westinghouse Electric Corp., P. O. Box 858, Pittsburgh 30, Pa.
Wheeler Insulated Wire Co., Inc., 150 E. Aurora St., Waterbury 91, Conn.

TRANSFORMERS—Pulse

Acme Electric Corp., 31 Water St., Cuba, N. Y.
Aerocoil, Inc., 24 Cliff St., Jersey City, N. J.
Aircraft Transformer Corp., West & Willow Aves., Long Branch, N. J.
Airdesign, Inc., 241 Fairfied Ave., Upper Darby, Pa.
Airpax Products Co., Middle River, Baltimore 20, Md.
Atlas Coil, Inc., Cottage St., Derby, Conn.
Atlas Engineering Co., 3 Edgewood St., Roxbury, Mass.
Barker & Williamson, 235 Fairfield Ave., Upper Darby, Pa.
Berkshire Laboratories, 588 Beaver Pond Rd., Lincoln, Mass.
Burroughs Corp., Electronic Instruments Div., 1209 Vine St., Philadelphia 7, Pa.
Central Transformer Co., 910 W. Jackson Blvd., Chicago, Ill.
Chicago Standard Transformer Corp., Addison & Elston, Chicago 18, Ill.
Communication Accessories Co., Red Bridge Rd., Hickman Hills, Mo.
Epsco, Incorporated, 126 Massachusetts Ave., Boston, Mass.
Ferranti Electric, Inc., 30 Rockefeller Plaza, New York 20, N. Y.
Fisher Engineering, Inc., 2060 U. S. 24 East, P. O. Box 327, Huntington, Ind.
Freed Transformer Co., Inc., 1736 Weirfield St., Brooklyn 27, N. Y.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Gramer-Halldorson Transformer Corp., 2734 N. Pulaski Rd., Chicago 39, Ill.
Imtra Corp., 58 Charles St., Cambridge 41, Mass.
Industrial Specialties Corp., 323 Atlantic Ave., Brooklyn 1, N. Y.
Industrial Transformer Corp., Gouldsboro, Pa.
Infra Electronic Corp., Roseland, N. J.
Jacobs Instrument Co., 4718 Bethesda Ave., Bethesda, Md.
K-V Transformer Co., 20 E. Franklin St., Danbury, Conn.
Kahn & Co., Inc., 541 Windsor St., Hartford, Conn.
Kenyon Transformer Co., Inc., 840 Barry St., New York 59, N. Y.
Laboratory for Electronics, Inc., 75 Pitts St., Boston 14, Mass.
Langevin Mfg. Corp., 37 W. 65th St., New York 23, N. Y.
Magnatran, Inc., 246 Schuyler Ave., Kearny, N. J.
Magnetics Research Co., 142 King St., Chappaqua, N. Y.
Miller Instruments, Inc., William, 325 N. Halstead Ave., Pasadena 8, Calif.
Maloney Electric Co., 5390 Bircher Blvd., St. Louis 20, Mo.
New London Instrument Co., P. O. Box 189, New London, Conn.
Ortho Filter Corp., 198 Albion Ave., Paterson 2, N. J.
PCA Electronics, Inc., 2180 Colorado Ave., Santa Monica, Calif.
Polyphase Instrument Co., 705 Haverford Rd., Bryn Mawr, Pa.
Power Transformer Co., Inc., 532 Mulberry St., Newark 5, N. J.
RADIO CORPORATION OF AMERICA, TUBE DIV., Harrison, N. J. ADV. PG. 19
Raypar, Inc., 7800 W. Addison St., Chicago, Ill.
Raytheon Mfg. Co., Equipment Operations, Waltham 54, Mass.
Redman Electronics Corp., P. O. Box 72, Thompsonville, Conn.
Remington Rand Inc., Engineering Research Associates Div., 1902 W. Minnehana Ave., St. Paul W4, Minn.
Sickles Div., F. W., General Instrument Corp., 165 Front St., Chicopee, Mass.
Sierra Electronic Corp., 1050 Brittan Ave., San Carlos, Calif.
Specialties, Inc., Skunks Misery Rd., Syosset, N. Y.
Sterling Transformer Corp., 297 N. Seventh St., Brooklyn 11, N. Y.
Technitrol Engineering Co., 2751 N. 4th St., Philadelphia 33, Pa.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Texas Instruments, Inc., 6000 Lemmon Ave., Dallas 9, Texas
Thordarson-Meisner Mfg. Divs., Mt. Carmel, Ill.
Transformers, Inc., 532 North St., Endicott, N. Y.
Transonic, Inc., 808 Sixteenth St., Box 96A, Bakersfield, Calif.
Tresco, 3824 Terrace St., Philadelphia 28, Pa.
Triad Transformer Corp., 4055 Redwood Ave., Venice, Calif.
U. S. Electronics Corp., 276 Warren St., Lyndhurst, N. J.
United Transformer Co., 150 Varick St., New York 13, N. Y.
Utah Radio Products, Inc., 1123 Franklin Rd., Huntington, Ind.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.
Wheeler Insulated Wire Co., Inc., 150 E. Aurora St., Waterbury 91, Conn.

TRANSFORMERS—r-f

Aerocoil Inc., 24 Cliff St., Jersey City, N. J.
Aircraft Transformer Corp., West & Willow Aves., Long Branch, N. J.
Airpax Products Co., Middle River, Baltimore 20, Md.
Atlas Coil, Inc., Cottage St., Derby, Conn.
Barker & Williamson, 235 Fairfield Ave., Upper Darby, Pa.
Cambridge Thermionic Corp., 445 Concord Ave., Cambridge 38, Mass.
Dietz Design & Mfg. Co., Grandview 6, Mo.
Electronic Components, Inc., 55 E. 11th St., Paterson, N. J.
Epsco, Incorporated, 126 Massachusetts Ave., Boston, Mass.
Essex Electronics, Springfield Ave., Berkeley Heights, N. J.
Gramer-Halldorson Transformer Corp., 2734 N. Pulaski Rd., Chicago 39, Ill.
I-T-E Circuit Breaker Co., 19th & Hamilton Sts., Philadelphia 30, Pa.
Industrial Transformer Corp., Gouldsboro, Pa.
Infra Electronic Corp., Roseland, N. J.
Kings Electronics Co., 40 Marbledale Rd., Tuckahoe, N. Y.
Laboratory for Electronics, Inc., 75 Pitts St., Boston, 14, Mass.
Leonard Electric Products Co., Inc., 67 34th St., Brooklyn 32, N. Y.
McIntosh Lab., Inc., 320 Water St., Binghamton, N. Y.
Mico Instrument Co., 82 S. Trowbridge St., Cambridge 38, Mass.
Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.
Miller Instruments, Inc., William, 325 N. Halstead Ave., Pasadena 8, Calif.
Milwaukee Transformer Co., 5231 N. Hopkins St., Milwaukee 9, Wis.
New London Instrument Co., P. O. Box 189, New London, Conn.
North Hills Electric Co., Inc., 203–18 35th Ave., Bayside 61, N. Y.
Radio Corporation of America, Engineering Products Div., Camden, N. J.
RADIO CORPORATION OF AMERICA, TUBE DIV., Harrison, N. J. ADV. PG. 19
Raypar, Inc., 7800 W. Addison St., Chicago, Ill.
Raytheon Mfg. Co., Equipment Operations, Waltham 54, Mass.
Redman Electronics Corp., P. O. Box 72, Thompsonville, Conn.
Sickles Div., F. W., General Instrument Corp., 165 Front St., Chicopee, Mass.
Sierra Electronic Corp., 1050 Brittan Ave., San Carlos, Calif.
SPELLMAN TELEVISION CO., INC., 3029 Webster Ave., Bronx 67, N. Y. ADV. PG. 134
Sperry Gyroscope Co., Great Neck, N. Y.
Square Root Mfg. Corp., 391 Saw Mill River Rd., Yonkers, N. Y.
Standard Winding Corp., 44–62 Johnes St., Newburgh, N. Y.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Texas Instruments Inc., 6000 Lemmon Ave., Dallas 9, Texas
Thordarson-Meissner Mfg. Divs., Mt. Carmel, Ill.
U. S. Electronics Corp., 276 Warren St., Lyndhurst, N. J.
Wirt Co., 5221 Greene St., Philadelphia 44, Pa.

TRANSFORMERS—Variable

Acme Electric Corp., 31 Water St., Cuba, N. Y.
Aircraft Transformer Corp., West & Willow Aves., Long Branch, N. J.
Airpax Products Co., Middle River, Baltimore 20, Md.
American Optical Co., Instrument Div., Buffalo 15, N. Y.
Atlas Coil, Inc., Cottage St., Derby, Conn.
Atlas Engineering Co., 3 Edgewood St., Roxbury, Mass.
Bogen Co., Inc., David, 29 Ninth Ave., New York 14, N. Y.
C.G.S. Laboratories, Inc., 391 Ludlow St., Stamford, Conn.
Eisler Engineering Co., 760 S. 13th St., Newark 3, N. J.
Federal Telephone & Radio Co., A Div. of International Telephone & Telegraph Corp., 100 Kingsland Rd., Clifton, N. J.
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
Gramer-Halldorson Transformer Corp., 2734 N. Pulaski Rd., Chicago 39, Ill.
Hevi Duty Electric Co., 4212 W. Highland Blvd., Milwaukee 1, Wis.
Highland Engineering Co., Westbury, N. Y.
Industrial Transformer Corp., Gouldsboro, Pa.
Infra Electronic Corp., Roseland, N. J.
Kahn & Co., Inc., 541 Windsor St., Hartford, Conn.
Laboratory for Electronics, Inc., 75 Pitts St., Boston 14, Mass.
Miller Instruments, Inc., William, 325 N. Halstead Ave., Pasadena 8, Calif.
Milwaukee Transformer Co., 5231 N. Hopkins St., Milwaukee 9, Wis.
Perkin Engineering Corp., 345 Kansas St., El Segundo, Calif.
Power Transformer Co., Inc., 532 Mulberry St., Newark 5, N. J.
RADIO CORPORATION OF AMERICA, TUBE DIV., Harrison, N. J. ADV. PG. 19
Raytheon Mfg. Co., Equipment Operations, Waltham 54, Mass.
Sola Electric Co., 4633 W. 16th St., Chicago 50, Ill.
Specialties, Inc., Skunks Misery Rd., Syosset, N. Y.
Superior Electric Co., 83 Laurel St., Bristol, Conn.
Thordarson-Meissner Mfg. Divs., Mt. Carmel, Ill.
Transformer Specialty Co., Bala Cynwyd, Pa.
United Transformer Co., 150 Varick St., New York 13, N. Y.
Vari-L Co., Inc., P. O. Box 1433, Stamford, Conn.
Wirt Co., 5221 Greene St., Philadelphia 44, Pa.

TRANSFORMERS—Voltage Regulating

Acme Electric Corp., 31 Water St., Cuba, N. Y.
Aircraft Transformer Corp., West & Willow Aves., Long Branch, N. J.
Airmec Ltd., High Wycombe, Buckinghamshire, England
Airpax Products Co., Middle River, Baltimore 20, Md.
Amplifier Corp. of America, 396 Broadway, New York 6, N. Y.
Atlas Coil, Inc., Cottage St., Derby, Conn.
Atlas Engineering Co., 3 Edgewood St., Roxbury, Mass.
Chicago Standard Transformer Corp., Addison & Elston, Chicago 18, Ill.
Eisler Engineering Co., 760 S. 13th St., Newark 3, N. J.
Federal Telephone & Radio Co., A Div. of International Telephone & Telegraph Corp., 100 Kingsland Rd., Clifton, N. J.
Ferranti Electric, Inc., 30 Rockefeller Plaza, New York 20, N. Y.
Freed Transformer Co., Inc., 1736 Weirfield St., Brooklyn 27, N. Y.
Gramer-Halldorson Transformer Corp., 2734 N. Pulaski Rd., Chicago 39, Ill.
Hevi Duty Electric Co., 4212 W. Highland Blvd., Milwaukee 1, Wis.
Highland Engineering Co., Westbury, N. Y.
Industrial Transformer Corp., Gouldsboro, Pa.
Infra Electronic Corp., Roseland, N. J.
Jobbins Electronic Enterprises, Menlo Park, Calif.
Kahn & Co., Inc., 541 Windsor St., Hartford, Conn.

Kellogg Switchboard & Supply Co., 79 W. Monroe, Chicago 3, Ill.
Laboratory for Electronics, Inc., 75 Pitts St., Boston 14, Mass.
Magnetic Research Corp., 200 E. Center St., El Segundo, Calif.
Magnetics Research Co., 142 King St., Chappaqua, N. Y.
Miller Instruments, Inc., William, 325 N. Halstead Ave., Pasadena 8, Calif.
Milwaukee Transformer Co., 5231 N. Hopkins St., Milwaukee 9, Wis.
Minnesota Electronics Corp., 1058 University Ave., St. Paul 4, Minn.
Maloney Electric Co., 5390 Bircher Blvd., St. Louis 20, Mo.
Mt. Vernon Precision Transformer Co., 201 S. Third Ave., Mt. Vernon, N. Y.
Ortho Filter Corp., 198 Albion Ave., Paterson 2, N. J.
Perkin Engineering Corp., 345 Kansas St., El Segundo, Calif.
Power Transformer Co., Inc., 532 Mulberry St., Newark 5, N. J.
Raytheon Mfg. Co., Equipment Operations, Waltham 54, Mass.
Sola Electric Co., 4633 W. 16th St., Chicago 50, Ill.
Sorensen & Co., Inc., 375 Fairfield Ave., Stamford, Conn.
Specialties, Inc., Skunks Misery Rd., Syosset, N. Y.
Superior Electric Co., 83 Laurel St., Bristol, Conn.
Thordarson-Meissner Mfg. Divs., Mt. Carmel, Ill.
Transformer Specialty Co., Bala-Cynwyd, Pa.
Transformers, Inc., 532 North St., Endicott, N. Y.
Transonic, Inc., 808 Sixteenth St., Box 96A, Bakersfield, Calif
U. S. Electronics Corp., 276 Warren St., Lyndhurst, N. J.
United Transformer Co., 150 Varick St., New York 13, N. Y.
Vara Mfg. Co., Inc., 1801 Walnut St., Garland, Texas

TRANSISTORS

Amperex Electronic Corp., 230 Duffy Ave., Hicksville, N. Y.
Baird Associates, Inc., 33 University Rd., Cambridge 38, Mass.
Bogue Electric Mfg. Co., 52 Iowa Ave., Paterson 3, N. J.
CBS-Hytron, A. Div. of Columbia Broadcasting System, Inc., 100 Endicott St., Danvers, Mass.
Electronic Research Associates, Inc., 715 Main St., North Caldwell, N. J.
Germanium Products Corp., 26 Cornelison Ave., Jersey City 4, N. J.
Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., S., Minneapolis, Minn.
RADIO CORPORATION OF AMERICA, TUBE DIV., Harrison, N. J. ADV. PG. 19
Radio Receptor Co., 251 W. 19th St., New York 11, N. Y.
Raytheon Mfg. Co., Equipment Operations, Waltham 54, Mass.
RAYTHEON MFG. CO., RECEIVING TUBE DIV., 55 Chapel St., Newton 58, Mass. ADV. PG. 20
Stupakoff Ceramic & Mfg. Co., Latrobe, Pa.
Sylvania Electric Products, Inc., 1740 Broadway, New York 19, N. Y.
Texas Instruments, Inc., 6000 Lemmon Ave., Dallas 9, Texas
Thordarson-Meissner Mfg. Divs., Mt. Carmel, Ill.
Transistor Products, Inc., 241–257 Crescent St., Waltham 54, Mass.
Tung-Sol Electric, Inc., 95 Eighth Ave., Newark 4, N. J.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.
WESTINGHOUSE ELECTRIC CORP., ELECTRONIC TUBE DIV., Box 284, Elmira, N. Y. ADV. PG. 29

TUBE FITTINGS

See FITTINGS—Flared Tube

TUBES—Electron

See also DIODES—Germanium
THERMISTORS

(a) Electrometer
(b) Ignitron
(c) Photomultiplier
(d) Power
(e) Receiving
(f) Rectifying
(g) Thyratron
(h) Voltage Regulating
(i) X-Ray
(j) Klystron

Amperex Electronic Corp., 230 Duffy Ave., Hicksville, N. Y. b-d-f-g-h-i
ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. c-g-h-i ADV. PG. 150
ATOMIC INSTRUMENT CO., 84 Massachusetts Ave., Cambridge 39, Mass. c. ADV. PG. Inside Back Cover
Bomac Laboratories, Inc., Salem Rd., Beverly, Mass. g-j
British Electronic Sales Co., 23-03 45th Rd., Long Island City 1, N. Y. c.
CBS-Hytron, A. Div. of Columbia Broadcasting System, Inc., 100 Endicott St., Danvers, Mass. d-e-f-h
CENTRAL SALES & MFG. CORP., 2 Richwood Place, Denville, N. J. d-f. ADV. PG. 140
Chatham Electronics Corp., Livingston, N. J. d-e-g-h
Cinema-Television Ltd., Worsley Bridge Rd., London, S. E. 26, England. c
Cossor, Ltd., 301 Windsor St., Halifax, N. S., Canada. c.
Diamond Power Speciality Corp., Lancaster, Ohio. e
DuMont Labs., Inc., Allen B., 760 Bloomfield Ave., Clifton, N. J. c
Eitel-McCullough, Inc., San Bruno, Calif. f-j.
ELECTRONS, INC., 127 Sussex Ave., Newark 3, N. J. d-f-g. ADV. PG. 144
Federal Telephone & Radio Co., A Div. of International Telephone & Telegraph Corp., 100 Kingsland Rd., Clifton, N. J. d-f
Ferranti Electric, Inc., 30 Rockefeller Plaza, New York 20, N. Y. a-f-g-h-j.
GENERAL ELECTRIC CO., TUBE DEPT., Schenectady 5, N. Y. a-b-c-d-e-f-g-h-i ADV. PG. 2–6
Industro, Inc., 649 Broadway, New York 12, N. Y. a-b-c-d-e-f-g-h.
Lewis & Kaufman Ltd., 17320 El Rancho Ave., P. O. Box 337, Los Gatos, Calif. d-f
Machlett Laboratories, Inc., 1063 Hope St., Springdale, Conn. d-f-g-i
NATIONAL RADIAC, INC., 10 Crawford St., Newark 2, N. J. c. ADV. PG. 21
North American Philips Co., Inc., 750 S. Fulton Ave., Mt. Vernon, N. Y. f-i
Nuclear Development Laboratory, P. O. Box 7034, Kansas City, Mo. h
Picker X-Ray Corp., 25 S. Broadway, White Plains, N. Y. i
Radio Corporation of America, Engineering Products Div., Camden, N. J. c-d-e-f-h.
RADIO CORPORATION OF AMERICA, TUBE DIV., Harrison, N. J. b-c-d-e-f-g-j ADV. PG. 19
Raytheon Mfg Co., Microwave & Power Tube Operations, Waltham 54, Mass. d-f-j
RAYTHEON MFG. CO., RECEIVING TUBE DIV., 55 Chapel St., Newton 58, Mass. a-d-e-f-h. ADV. PG. 20
Red Bank Division, Bendix Aviation Corp., Eatontown, N. J. e-f-g-h-i.
Sanders Associates, Inc., Nashua, N. H. b-d-e-f-g-h.
Sperry Gyroscope Co., Great Neck, N. Y. j.
Sylvania Electric Products, Inc., 1740 Broadway, New York 19, N. Y. c-d-e-f-g-h-j
Tung-Sol Electric, Inc., 95 Eighth Ave., Newark 4, N. J. c-d-e-f-h
Vactron, Inc., P. O. Box 641, Ventura, Calif. c-d-f-g-h-i
Vacuum Tube Products, 506 S. Cleveland St., Oceanside, Calif. d-f-g.
Varian Associates, 611 Hansen Way, Palo Alto, Calif. d-j
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. a-f-h ADV. PG. 107
Western Radiation Lab., 1107 W. 24th St., Los Angeles 7, Calif. h
WESTINGHOUSE ELECTRIC CORP., ELECTRONIC TUBE DIV., Box 284, Elmira, N. Y. b-c-d-e-f-g-h-i. ADV. PG. 29
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa. a-b-c-d-e-f-g-h-i
X-Ray Dept. of General Electric Co., 4855 Electric Ave., Milwaukee, Wis. i

TUBING—Glass

Ace Glass, Inc., Vineland, N. J.
Bache & Co., Semon, 636 Greenwich St., New York 14, N. Y.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 106
Electric Steel Foundry Co., 2141 N. W. 25th Ave., Portland 10, Ore.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Fredericks Co., George E., Bethayres, Pa.
Hellige, Inc., 877 Stewart Ave., Long Island City 1, N. Y.
LERMAC INC., 5303 Adeline St., Oakland, Calif. ADV. PG. 114
Milwaukee Glass Works, Inc., 2338 N. 30th St., Milwaukee, Wis.
Pantatron Ltd., Metals Div., Market Bldgs., 29 Mincing Lane, London, E. C. 3, England
Scientific Electronic Labs., Inc., 866 Bergen St., Newark 8, N. J.
Special Glass Products Co., 10 W. 33rd St., New York 1, N. Y.
Wakefield Industries, Inc., 5108 Grove St., Skokie, Ill.
Wheaton Co., T. C., Millville, N. J.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

TUBING—Metal and Alloy

Air Associates, Inc., Teterboro, N. J.
Alpha Metals, Inc., P. O. Box 34, 56 Water St., Jersey City 4, N. J.
Aluminum Co. of America, Alcoa Bldg., Pittsburgh 19, Pa.
American Brass Co., Waterbury 20, Conn.
Astell & Co., Inc., John B., 90 W. Broadway, New York 7, N. Y.
Babcock & Wilcox Co., 161 E. 42nd St., New York 17, N. Y.
Baker & Co., Inc., 113 Astor St., Newark 5, N. J.
Bishop & Co., J., Malvern, Pa.
BLICKMAN, INC., S., 7900 Gregory Ave., Weehawken, N. J. ADV. PG. 32
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Bridgeport Brass Co., 30 Grand St., Bridgeport, Conn.
Carpenter Steel Co., The, Reading, Pa.
Chase Brass & Copper Co., Inc., 236 Grand St., Waterbury 20, Conn.
Crucible Steel Co. of America, Henry W. Oliver Bldg., P. O. Box 88, Pittsburgh 30, Pa.
Division Lead Co., 7742 W. 61st Place, Summit, Ill.
Dow Chemical Co., Midland, Mich.
Fisher Engineering, Inc., 2060 U. S. 24 East, P. O. Box 327, Huntington, Ind.
Flexonics Corp., 1315 S. Third Ave., Maywood, Ill.
Fulton Sylphon Division, Robertshaw-Fulton Controls Co., Knoxville 1, Tenn.
Haynes Stellite Co., Div. of Union Carbide & Carbon Corp., 725 S. Lindsay St., Kokomo, Ind.
International Nickel Co., Inc., 67 Wall St., New York 5, N. Y.
Kent Co., F. C., 64 Howard St., Irvington, N. J.
Keystone Electronics Corp., 423 Broome St., New York 13, N. Y.
Knapp Mills Inc., 23–15 Borden Ave., Long Island City 1, N. Y.
NATIONAL LEAD CO., 111 Broadway, New York 6, N. Y. ADV. PG. 27
Pantatron Ltd., Metals Div., Market Bldgs., 29 Mincing Lane, London, E. C. 3, England
Precision Tube Co., Inc., North Wales, Pa.
Revere Copper & Brass, Inc., 230 Park Avenue, New York 17, N. Y.
Scientific Electronic Labs. Inc., 866 Bergen St., Newark 8, N. Y.
Superior Tube Co., Norristown, Pa.

TUBING—Plastic

Ace Glass, Inc., Vineland, N. J.
Anchor Plastics Co., Inc., 36–36 36th St., Long Island City 6, N. Y.
Baer Co., N. S., 9 Montgomery Ave., Hillside, N. J.
Continental-Diamond Fibre Co., Newark, Delaware
Electronic Mechanics, Inc., 101 Clifton Blvd., Clifton, N. J.
Federal Telecommunication Labs., A Div. of International Telephone & Telegraph Corp., 500 Washington Ave., Nutley, N. J.
General Electric Co., Chemical Div., 1 Plastics Ave., Pittsfield, Mass.
Houghton Laboratories, Inc., 322 Bush St., Olean, N. Y.
Imperial Brass Mfg. Co., 1200 W. Harrison St., Chicago 7, Ill.
Irvington Varnish & Insulator Div. of Minnesota Mining & Mfg. Co., 10 Argyle Terrace, Irvington, N. J.
Keller Products, Inc., Manchester, N. H.
Knapp Mills, Inc., 23–15 Borden Ave., Long Island City 1, N. Y.
LERMAC INC., 5303 Adeline St., Oakland, Calif. ADV. PG. 114
McMillan Industrial Corp., Brownville Industrial Plant, Ipswich, Mass.
Markel & Sons, L. Frank, School House Lane, Norristown, Pa.
Mitchell-Rand Insulation Co., Inc., 51 Murray St., New York 7, N. Y.
Murray Plastics Co., 26 Cottage St., Poughkeepsie, N. Y.
National Vulcanized Fibre Co., Wilmington 99, Del.
Natvar Corp., 211 Randolph Ave., Woodbridge, N. J.
Polymer Corp. of Pennsylvania, Reading, Pa.
Printloid Inc., 93 Mercer St., New York 12, N. Y.
Shamban & Co., W. S., 11617 W. Jefferson Blvd., Culver City, Calif.
Spaulding Fibre Co., Inc., 310 Wheeler St., Tonawanda, N. Y.
U. S. GASKET CO., FLUOROCARBON PRODUCTS, INC., DIV., 600 N. 10th St., Camden 1, N. J. ADV. PG. 149
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.
U. S. Stoneware Co., Akron 9, Ohio
Vanton Pump & Equipment Corp., 350 Fifth Ave., New York 1, N. Y.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

TUBING—Rubber

Ace Glass, Inc., Vineland, N. J.
Air Associates, Inc., Teterboro, N. J.
Auburn Mfg. Co., 500 Stack St., Middletown, Conn.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Felt Products Mfg. Co., 1504 W. Carroll Ave., Chicago 7, Ill.
Garlock Packing Co., Palmyra, N. Y.
General Electric Co., Chemical Div., 1 Plastics Ave., Pittsfield, Mass.
Goodyear Tire & Rubber Co., Akron, Ohio
Luzerne Rubber Co., Muirhead Ave., Trenton, N. J.
Neo Sil Products Div., Rubber Associates, Inc., 850 Metropolitan Ave., Brooklyn 11, N. Y.
Pantatron Ltd., Metals Div., Market Bldgs., 29 Mincing Lane, London, E. C. 3, England
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.
Vanton Pump & Equipment Corp., 350 Fifth Ave., New York 1, N. Y.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

TUBING—Seamless

Aluminum Co. of America, Alcoa Bldg., Pittsburgh 19, Pa.
American Brass Co., Waterbury 20, Conn.
Astell & Co., Inc., John B., 90 W. Broadway, New York 7, N. Y.
Babcock & Wilcox Co., 161 E. 42nd St., New York 17, N. Y.
Bethlehem Steel Co., Bethlehem, Pa.
Bishop & Co., J., Malvern, Pa.
Bridgeport Brass Co., 30 Grand St., Bridgeport, Conn.
Chase Brass & Copper Co., Inc., 236 Grand St., Waterbury 20, Conn.
Electric Steel Foundry Co., 2141 N.W. 25th Ave., Portland 10, Ore.
Fansteel Metallurgical Corp., North Chicago, Ill.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville 1, Tenn.
Irvington Varnish & Insulator Div. of Minnesota Mining & Mfg. Co., 10 Argyle Terrace, Irvington, N. J.
Pantatron Ltd., Metals Div., Market Bldgs., 29 Mincing Lane, London, E.C. 3, England
Precision Tube Co., Inc., North Wales, Pa.
Revere Copper & Brass, Inc., 230 Park Ave., New York 17, N. Y.
Superior Tube Co., Norristown, Pa.
Titeflex Inc., 500 Frelinghuysen Ave., Newark 5, N. J.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

UTENSILS—Laboratory

Baker & Co., Inc., 113 Astor St., Newark 5, N. J.
Burrell Corp., 2233 Fifth Ave., Pittsburgh, Pa.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 106
Eberbach Corp., Ann Arbor, Mich.
Emerson-Sack Warner Corp., 150 Dorchester Ave., South Boston, Mass.
Fisher Scientific Co., 709 Forbes Ave., Pittsburgh 19, Pa.
Jasonals Chemical Corp., 825 E. 42nd St., Brooklyn 10, N. Y.
Labline, Inc., 217 N. Desplaines St., Chicago 6, Ill.
Special Glass Products Co., 10 W. 33rd St., New York 1, N. Y.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

VALVES—Ball-Check

Air Associates, Inc., Teterboro, N. J.
Anderson Valve Works, 9th & Adams Ave., Marion, Ind.
Associated Valve & Engineering Co., 1150 W. Marquette Rd., Chicago 21, Ill.
Electric Steel Foundry Co., 2141 N.W. 25th Ave., Portland 10, Ore.
GENERAL ELECTRIC CO., ATOMIC POWER EQUIPMENT COMPONENT, 2900 Campbell Ave., Schenectady 6, N. Y. ADV. PG. 2–6
Hoke, Inc., Englewood, N. J.
Hoppe Engineering Co., 1 High St., Greensboro, Ind.
Imperial Brass Mfg. Co., 1200 W. Harrison St., Chicago 7, Ill.
Vanton Pump & Equipment Corp., 350 Fifth Ave., New York 1, N. Y.

VALVES—Bellows Seal

Associated Valve & Engineering Co., 1150 W. Marquette Rd., Chicago 21, Ill.
Consolidated Vacuum Corp., 1775 Mt. Read Blvd., Rochester 3, N. Y.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Fulton Sylphon Division, Robertshaw-Fulton Controls Co., Knoxville 1, Tenn.
GENERAL ELECTRIC CO., ATOMIC POWER EQUIPMENT COMPONENT, 2900 Campbell Ave., Schenectady 6, N. Y. ADV. PG. 2–6
Hammel-Dahl Co., 175 Post Rd., Providence 5, R. I.
Hoke, Inc., Englewood, N. J.
Hoppe Engineering Co., 1 High St., Greensboro, Ind.
Kieley & Mueller Co., Inc., Genung St., Middletown, N. Y.
Measurement Engineering Ltd., Arnprior, Ontario, Canada
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., S., Minneapolis, Minn.

VALVES—Canned Rotor

GENERAL ELECTRIC CO., ATOMIC POWER EQUIPMENT COMPONENT, 2900 Campbell Ave., Schenectady 6, N. Y. ADV. PG. 2–6

VALVES—Control

Air Associates, Inc., Teterboro, N. J.
Anderson Valve Works, 9th & Adams Ave., Marion, Ind.
Associated Valve & Engineering Co., 1150 W. Marquette Rd., Chicago 21, Ill.
Avotmatic Switch Co., 391 Lakeside Ave., Orange, N. J.
Automatic Temperature Control Co., Inc., 5206 Pulaski Ave., Philadelphia 44, Pa.
Bristol Co., Waterbury 20, Conn.
Conoflow Corp., 2100 Arch St., Philadelphia 3, Pa.
Cutler-Hammer, Inc., 412 N. 12th St., Milwaukee 1, Wis.
Denison Engineering Co., 1160 Dublin Rd., Columbus 16, Ohio
Eclipse Fuel Engineering Co., 1100 Buchanan, Rockford, Ill.
Electric Steel Foundry Co., 2141 N.W. 25th Ave., Portland 10, Ore.
Fairbanks Co., The, 393 Lafayette St., New York 3, N. Y.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
FORD INSTRUMENT CO., DIV. OF SPERRY CORP., 31–10 Thompson Ave., Long Island City, N. Y. ADV. PG. 105
Foster Engineering Co., Union, N. J.
Foxboro Co., 38 Neponset Ave, Foxboro, Mass.
Fulton Sylphon Division, Robertshaw-Fulton Controls Co., Knoxville 1, Tenn.
General Controls Co., Glendale 1, Calif.
GENERAL ELECTRIC CO., ATOMIC POWER EQUIPMENT COMPONENT, 2900 Campbell Ave., Schenectady 6, N. Y. ADV. PG. 2–6
Hagan Corp., 323 Fourth Ave., Pittsburgh 22, Pa.
Hammel-Dahl Co., 175 Post Rd., Providence 5, R. I.
Hannifin Corp., 501 S. Wolf Rd., Des Plaines, Ill.
Hoke, Inc., Englewood, N. J.
Hoppe Engineering Co., 1 High St., Greensboro, Ind.
Imperial Brass Mfg. Co., 1200 W. Harrison St., Chicago 7, Ill.
Johnson Service Co., 507 E. Michigan St., Milwaukee 2, Wis.
Keckley Co., O. C., 400 Madison St., Chicago 6, Ill.
Kieley & Mueller Co., Inc., Genung St., Middletown, N. Y.
Leslie Co., 299 Grant Ave., Lyndhurst, N. J.
Linde Air Products Co., Div. of Union Carbide & Carbon Corp., 30 E. 42nd St., New York 17, N. Y.
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., S., Minneapolis, Minn.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Back Cover
National Pneumatic Co., Inc., & Holtzer-Cabot Divisions, 125 Amory St., Boston 19, Mass.
Pacific Division, Bendix Aviation Corp., 11600 Sherman Way, North Hollywood, Calif.
Powers Regulator Co., The, 3400 Oakton, Skokie, Ill.
Rockwell Co., W. S. 200 Eliot St., Fairfield, Conn.
Sanders Associates, Inc., Nashua, N. H.
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
Taylor Instrument Companies, 95 Ames St., Rochester, N. Y.

VALVES—Corrosion Resistant

Air Associates, Inc., Teterboro, N. J.
Alloy Steel Products Co., 1329 W. Elizabeth Ave., Linden, N. J.
Associated Valve & Engineering Co., 1150 Marquette Rd., Chicago 21, Ill.
Astell & Co., Inc., John B., 90 W. Broadway, New York 7, N. Y.
Atlas Mineral Products Co., 131 Norman St., Mertztown, Pa.
Automatic Switch Co., 391 Lakeside Ave., Orange, N. J.
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 10
Bristol Co., Waterbury 20, Conn.
Conoflow Corp., 2100 Arch St., Philadelphia 3, Pa.
Electric Steel Foundry Co., 2141 N.W. 25th Ave., Portland 10, Ore.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
General Ceramics & Steatite Corp., 250 Crows Mill Road, Keasbey, N. J.
GENERAL ELECTRIC CO., ATOMIC POWER EQUIPMENT COMPONENT, 2900 Campbell Ave., Schenectady 6, N. Y. ADV. PG. 2–6
Hoke, Inc., Englewood, N. J.
Hoppe Engineering Co., 1 High St., Greensboro, Ind.
Kieley & Mueller Co., Inc., Genung St., Middletown, N. Y.
Knapp Mills Inc., 23–15 Borden Ave., Long Island City, N. Y.
Knight, Maurice A., 171 Kelly Ave., Akron, Ohio
Lapp Insulator Co., Inc., 31 Gilbert St., LeRoy, N. Y.
Leslie Co., 299 Grant Ave., Lyndhurst, N. J.
Luzerne Rubber Co., Muirhead Ave., Trenton, N. J.
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., S., Minneapolis, Minn.
National Lead Co., 111 Broadway, New York 6, N. Y. ADV. PG. 27
Parr Instrument Co., Moline, Ill
Skinner Electric Valve Div., The Skinner Chuck Co., Edgewood Ave., New Britain, Conn.
U. S. GASKET CO., FLUOROCARBON PRODUCTS, INC., DIV., 600 N. 10th St., Camden 1, N. J. ADV. PG. 149
Vanton Pump & Equipment Corp., 350 Fifth Ave., New York 1, N. Y.

VALVES—Packed-Seal

Associated Valve & Engineering Co., 1150 W. Marquette Rd., Chicago 21, Ill.
Automatic Switch Co., 391 Lakeside Ave., Orange, N. J.
Electric Steel Foundry Co., 2141 N.W. 25th Ave., Portland 10, Ore.
GENERAL ELECTRIC CO., ATOMIC POWER EQUIPMENT COMPONENT, 2900 Campbell Ave., Schenectady 6, N. Y. ADV. PG. 2–6
Hagan Corp., 323 Fourth Ave., Pittsburgh 22, Pa.
Hammel-Dahl Co., 175 Post Rd., Providence 5, R. I.
Hoke, Inc., Englewood, N. J.
Hoppe Engineering Co., 1 High St., Greensboro, Ind.
Imperial Brass Mfg. Co., 1200 W. Harrison St., Chicago 7, Ill.
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., S., Minneapolis, Minn.

VALVES—Solenoid

Air Associates, Inc., Teterboro, N. J.
Alco Valve Co., 865 Kingsland Ave., St. Louis 5, Mo.
Anderson Valve Works, 9th & Adams Ave., Marion, Ind.
Associated Valve & Engineering Co., 1150 W. Marquette Rd., Chicago 21, Ill.
Automatic Switch Co., 391 Lakeside Ave., Orange, N. J.
Caltron Co., 1406 S. Hobart Blvd., Los Angeles 6, Calif.
Consolidated Vacuum Corp., 1775 Mt. Read Blvd., Rochester 3, N. Y.
Denison Engineering Co., 1160 Dublin Rd., Columbus 16, Ohio
FORD INSTRUMENT CO., DIV. OF SPERRY CORP., 31–10 Thompson Ave., Long Island City, N. Y. ADV. PG. 105
General Controls Co., Glendale 1, Calif.
High Vacuum Equipment Corp., 349 Lincoln St., Hingham, Mass.
Hoppe Engineering Co., 1 High St., Greensboro, Ind.
Johnson Corp., 809 Wood St., Three Rivers, Mich.
Kahlenberg Bros. Co., 12th & Monroe Sts., Two Rivers, Wis.
Keckley Co., O. C., 400 W. Madison St., Chicago 6, Ill.
Measurement Engineering Ltd., Arnprior, Ontario, Canada
Minneapolis-Honeywell Regulator Co., 2735 Fourth Ave., S., Minneapolis, Minn.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Back Cover
National Pneumatic Co., Inc., & Holtzer-Cabot Divisions, 125 Amory St., Boston 19, Mass.
Pacific Division, Bendix Aviation Corp., 11600 Sherman Way, North Hollywood, Calif.
Phillips Control Corp., 59 W. Washington St., Joliet, Ill.
Sanders Associates, Nashua, N. H.
Skinner Electric Valve Div., The Skinner Chuck Co. Edgewood Ave., New Britain, Conn.

VALVES—Vacuum

Air Associates, Inc., Teterboro, N. J.
American Instrument Co., Inc., 8030 Georgia Ave., Silver Spring, Md.
Anderson Valve Works, 9th & Adams Ave., Marion, Ind.
Associated Valve & Engineering Co., 1150 W. Marquette Rd., Chicago 21, Ill.
Automatic Switch Co., 391 Lakeside Ave., Orange, N. J.
Consolidated Vacuum Corp., 1775 Mt. Read Blvd., Rochester 3, N. Y.
Electric Steel Foundry Co., 2141 N.W. 25th Ave., Portland 10, Ore.
Foster Engineering Co., Union, N. J.
Fulton Sylphon Division, Robertshaw-Fulton Controls Co., Knoxville 1, Tenn.
Hannifin Corp., 501 S. Wolf Rd., Des Plaines, Ill.
High Vacuum Equipment Corp., 349 Lincoln St., Hingham, Mass.
HIGH VOLTAGE ENGINEERING CORP., 7 University Rd., Cambridge 38, Mass. ADV. PG. 15
Hoke, Inc., Englewood, N. J.
Hoppe Engineering Co., 1 High St., Greensboro, Ind.
International Pump & Machine Works, 11–13 Governor St., Newark 3, N. J.
KINNEY MFG. DIV., THE NEW YORK AIR BRAKE CO., 3529 Washington St., Boston, Mass. ADV. PG. 103
Measurement Engineering Ltd., Arnprior, Ontario, Canada
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., S., Minneapolis, Minn.
National Research Corp., 160 Charlemont St., Newton Highlands, Mass.
Optical Film Engineering Co., 2731 N. 6th St., Philadelphia 33, Pa.
STOKES MACHINE CO., F. J., 5500 Tabor Rd., Philadelphia 20, Pa. ADV. PG. 24
Vacuum Electronic Engineering Co., 86 Denton Ave., New Hyde Park, N. Y.

VENTILATORS

Accurate Sheet Metal & Mfg. Works, 2336–38 Milwaukee Ave., Chicago 47, Ill.
American Machine & Metals, Inc., East Moline, Ill.
Century Fan & Ventilator Co., 25 Cedar St., Stamford, Conn.
Dayton Electric Mfg. Co., 126 S. Oakley Blvd., Chicago 12, Ill.
Emerson-Sack-Warner Corp., 150 Dorchester Ave., South Boston 27, Mass.
Hirschman-Pohle Co., Inc., 115 Lent Ave., LeRoy, N. Y.
International Engineering, Inc., 1200 Bolander Ave., Dayton, Ohio.
Iona Ventilator Co., Inc., 2829 W. Dauphin St., Philadelphia, Pa.
Jordon & Co., Inc., E. South & New Jersey, Indianapolis, Ind.
Lesa, Via Bergamo 21, Milan, Italy
Robbins & Myers, Inc., 1345 Lagonda Ave., Springfield, Ohio
Trane Company, The, La Crosse, Wis.
Warner Ventilator Co., La Grange, Ind.
Western Engineering & Mfg. Co., 4108 Ocean Park Ave., Venice, Calif.

VIEWING EQUIPMENT—Optical

Bache & Co., Semon, 636 Greenwich St., New York, N. Y.
Buhl Optical Co., 1009 Beech Ave., Pittsburgh, Pa.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 106
Edmund Scientific Co., 502 E. Gloucester Pike, Barrington, N. J.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Gaertner Scientific Corp., 1237 Wrightwood Ave., Chicago, Ill.
GENERAL ELECTRIC CO., ATOMIC POWER EQUIPMENT COMPONENT, 2900 Campbell Ave., Schenectady 6, N. Y. ADV. PG. 2–6
Graflex, Inc., 154 Clarissa St., Rochester 8, N. Y.
Hellige, Inc., 877 Stewart Ave., Long Island City 1, N. Y.
Hycon Mfg. Co., 2961 E. Colorado St., Pasadena 8, Calif.
Jarrell-Ash Co., 26 Farwell St., Newtonville, Mass.
KOLLMORGEN OPTICAL CORP., 347 King St., Northampton, Mass. ADV. PG. 120
Lancaster Lens Co., Lancaster, Ohio
Macbeth Corp., P. O. Box 950, Newburgh, N. Y.
PENBERTHY INSTRUMENT CO., HI-D DIVISION, 666 Adams St., Seattle 8, Wash. ADV. PG. 146
Perkin-Elmer Corp., Norwalk, Conn.
SCIENTIFIC SPECIALTIES CORP., Snow & Union Sts., Brighton 35, Mass. ADV. PG. 138
Telecomputing Corp., 133 E. Santa Anita Ave., Burbank, Calif.
Tinsley Laboratories, Inc., 2526 Grove St., Berkeley 4, Calif.
Zenith Optical Co., Div. of Polan Industries, Huntington, W. Va.

VIEWING EQUIPMENT—Safety Glass

AMERAY CORP., Route #46, Kenvil, N. J. ADV. PG. 123
Bache & Co., Semon, 636 Greenwich St., New York 14, N. Y.

VIEWING EQUIPMENT—Shielding Windows

AMERAY CORP., Route #46, Kenvil, N. J. ADV. PG. 123
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 10
Buhl Optical Co., 1009 Beech Ave., Pittsburgh 33, Pa.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 106
GENERAL ELECTRIC CO., ATOMIC POWER EQUIPMENT COMPONENT, 2900 Campbell Ave., Schenectady 6, N. Y. ADV. PG. 2–6
Harty Co., Inc., R. V., 1433 Sloman Ave., Detroit 11, Mich.
Knapp Mills, Inc., 23–15 Borden Ave., Long Island City 1, N. Y.
KOLLMORGEN OPTICAL CORP., 347 King St., Northampton, Mass. ADV. PG. 120
LENNARD CO., INC., P. M., 671 Bergen St., Brooklyn 38, N. Y. ADV. PG. 26
LERMAC INC., 5303 Adeline St., Oakland, Calif. ADV. PG. 114
PENBERTHY INSTRUMENT CO., HI-D DIVISION, 666 Adams St., Seattle 8, Wash. ADV. PG. 146
RADIATION INSTRUMENT DEVELOPMENT LAB., 2337 W. 67th St., Chicago 36, Ill. ADV. PG. 143
RAY-PROOF CORP., 513 W. 54th St., New York, N. Y. ADV. PG. 22
Tinsley Laboratories, Inc., 2526 Grove St., Berkeley 4, Calif.
TRACERLAB, INC., 130 High St., Boston 10, Mass. ADV. PG. 23

VIEWING EQUIPMENT—Television

Dage Electronics Div., Thompson Products, Inc., 69 N. Second St., Beech Grove, Ind.
DuMont Labs., Inc., Allen B., 760 Bloomfield Ave., Clifton, N. J.
Falk & Co., Ltd., M., 5 Victoria St., London S.W. 1, England
General Precision Laboratory, Inc., Pleasantville, N. Y.
I-T-E Circuit Breaker Co., 19th & Hamilton Sts., Philadelphia 30, Pa.
Radio Corporation of America, Engineering Products Div., Camden, N. J.
Teletronics Laboratory, Inc., Kinkle St., Westbury, N. Y.

VOLTMETERS

Assembly Products, Inc., Chagrin Falls 6, Ohio
Baldwin Instrument Co., Ltd., Brooklands Works, Dartford, Kent, England
Beede Electrical Instrument Co., Inc., Penacook, N. H.
BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121
Bristol Co., Waterbury 20, Conn.
Burlington Instrument Co., 203 N. Third St., Burlington, Iowa
Cossor, Ltd., 301 Windsor St., Halifax, N. S., Canada
DeJur-Amsco Corp., 45–01 Northern Blvd., Long Island City 1, N. Y.
Electronic Instrument Co., Inc., 84 Withers St., Brooklyn 11, N. Y.
Engelhard, Inc., Charles, 850 Passaic St., East Newark, N. J.
Esterline-Angus Co., Inc., P. O. Box 596, Indianapolis 6, Ind.
FURST ELECTRONICS, INC., 3330-A W. Lawrence Ave., Chicago 25, Ill. ADV. PG. 126
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 2–6
Hickok Electrical Instrument Co., 10514 Dupont Ave., Cleveland 8, Ohio
Industrial Test Equipment Co., 55 E. 11th St., New York 3, N. Y.
International Instruments, Inc., P. O. Box 2954, New Haven 15, Conn.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Marion Electrical Instrument Co., 402 Canal St., Manchester, N. H.
Measurement Engineering Ltd., Arnprior, Ontario, Canada
Measurements Corp., Boonton, N. J.
Meters, Inc., 5353 N. Keystone Ave., Indianapolis 20, Ind.
Metropolitan Electronics & Instruments Co., 106 Fifth Ave., New York 11, N. Y.
Pace Electrical Instruments Co., Inc., 408 Manhattan Ave., Brooklyn 11, N. Y.
Phaostron Co., 151 Pasadena Ave., South Pasadena, Calif.
Precise Measurements Co., 942 Kings Highway, Brooklyn 23, N. Y.
Precision Apparatus Co., Inc., 92–27 Horace Harding Blvd., Elmhurst, N. Y.
Pyramid Instrument Corp., 630 Merrick Rd., Lynbrook, N. Y.
Q. V. S., Inc., 20 N. 15th St., East Orange, N J.
Radio City Products Co., Inc., Centre & Glendale Sts., Easton, Pa.
RADIO CORPORATION OF AMERICA, TUBE DIV., Harrison, N. J. ADV. PG. 19
Rawson Electrical Instrument Co., 114 Potter St., Cambridge 42, Mass.
Reliance Instrument Co., 3027 W. Van Buren St., Chicago 12, Ill.
Roller-Smith Corp., 1825 W. Market, Bethlehem, Pa.
SCIENTIFIC SPECIALTIES CORP., Snow & Union Sts., Brighton 35, Mass. ADV. PG. 138
Sensitive Research Instrument Corp., 9 Elm Ave., Mt. Vernon, N. Y.
Shurite Meters, 35 Hamilton St., New Haven 8, Conn.
Sterling Mfg. Co., 7201 Wentworth, Cleveland, Ohio
Sticht Co., Inc., Herman H., 27 Park Place, New York 7, N. Y.
Sun Electric Corp., 6323 Avondale Ave., Chicago 31, Ill.
Supreme, Inc., Box MH552, Greenwood, Miss.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Triplett Electrical Instrument Co., 286 Harmon Rd., Bluffton, Ohio
U. S. Gauge Div., American Machine and Metals, Inc., Sellersville, Pa.
WELCH SCIENTIFIC CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148
Western Sound & Electric Labs., Inc., 805 S. Fifth St., Milwaukee 4, Wis.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.
Weston Electrical Instrument Corp., 614 Frelinghuysen Ave., Newark 5, N. J.
Winslow Co., Inc., 9 Liberty St., Newark, N. J.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

VOLTMETERS—Electronic

Advance Electronics Co., 451 Highland Ave., Passaic, N. J.
Airmec Ltd., High Wycombe, Buckinghamshire, England
American Chronoscope Corp., 316 W. First St., Mt. Vernon, N. Y.
Baldwin Instrument Co., Ltd., Brooklands Works, Dartford, Kent, England
Ballantine Laboratories, Inc., Boonton, N. J.
BERKELEY DIV. OF BECKMAN INSTRUMENTS, INC., 2200 Wright Ave., Richmond, Calif. ADV. PG. 121
Bristol Co., Waterbury 20, Conn.
Chatham Electronics Corp., Livingston, N. J.
CLEGG LABORATORIES, INC., 142 S. Livingston Ave., Livingston, N. J. ADV. PG. 110
Communication Measurement Labs., Inc., 350 Leland Ave., Plainfield, N. J.
Cossor, Ltd., 301 Windsor St., Halifax, N. S., Canada
Daven Co., The, 191 Central Ave., Newark 4, N. J.
DuMont Labs., Inc., Allen B., 760 Bloomfield Ave., Clifton, N. J.
EKCO ELECTRONICS LTD., EKCO WORKS, Southend-on-Sea, Essex, England. ADV. PG. 127
Electronic Associates, Inc., Long Branch, N. J.
Electronic Instrument Co., Inc., 84 Withers St., Brooklyn 11, N. Y.
Endevco Corp., 689 S. Fair Oaks Ave., Pasadena, Calif.
Federal Telephone & Radio Co., A Div. of International Telephone & Telegraph Corp., 100 Kingsland Rd., Clifton, N. J.
FURST ELECTRONICS, INC., 3330-A W. Lawrence Ave., Chicago 25, Ill. ADV. PG. 126
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
Heath Co., Benton Harbor, Mich.
Hewlett-Packard Co., 395 Page Mill Rd., Palo Alto, Calif.
Hickok Electrical Instrument Co., 10514 Dupont Ave., Cleveland 8, Ohio
Industrial Control Co., Straight Path & Arlington Ave., Wyandanch, N. Y.
Industrial Test Equipment Co., 55 E. 11th St., New York 3, N. Y.
Jennings Radio Mfg. Corp., 970 McLaughlin Ave., San Jose 12, Calif.
Kay-Lab, Inc., 1090 Morena Blvd., San Diego 10, Calif.
Keithley Instruments, 3868 Carnegie Ave., Cleveland, Ohio
Leland Instruments Ltd., 22–23 Millbank, Westminster, S.W. 1, London, England
Marconi Instruments Ltd., 23 Beaver St., New York 4, N. Y.

Measurements Corp., Boonton, N. J.
Mercury Electronic Co., Box 450, Red Bank, N. J.
Metropolitan Electronics & Instruments Co., 106 Fifth Ave., New York 11, N. Y.
Millivac Instruments, 444 Second St., Schenectady, N. Y.
NEUTRONIC ASSOCIATES, 87-16 116th St., Richmond Hill, N. Y. ADV. PG. 116
New London Instrument Co., P. O. Box 189, New London, Conn.
Peschel Electronics, Inc., 13 Garden St., New Rochelle, N. Y.
Phaostron Co., 151 Pasadena Ave., South Pasadena, Calif.
Precise Development Corp., 2 Neil Court, Oceanside, N. Y.
Precision Apparatus Co., Inc., 92-97 Horace Harding Blvd., Elmhurst, N. Y.
Pyramid Instrument Corp., 630 Merrick Rd., Lynbrook, N. Y.
Radio City Products Co., Inc., Centre & Glendale Sts., Easton, Pa.
Radio Corporation of America, Engineering Products Div., Camden, N. J.
RADIO CORPORATION OF AMERICA, TUBE DIV., Harrison, N. J. ADV. PG. 19
Research Electronics Laboratory, Roslyn, Pa.
SCIENTIFIC SPECIALTIES CORP., Snow & Union Sts., Brighton 35, Mass. ADV. PG. 138
Shallcross Mfg. Co., 10 Jackson Ave., Collingdale, Pa.
Sorensen & Co., Inc., 375 Fairfield Ave., Stamford, Conn.
Sierra Electronic Corp., 1050 Brittan Ave., San Carlos, Calif.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Specialty Engineering Div. of Specialty Assembling & Packing Co., 79 Clifton Place, Brooklyn 38, N. Y.
Supreme, Inc., Box MH552, Greenwood, Miss.
Sylvania Electric Products, Inc., 1740 Broadway, New York 19, N. Y.
Telecomputing Corp., 133 E. Santa Anita Ave., Burbank, Calif.
Telectro Industries Corp., 35-16 37th St., Long Island City 1, N. Y.
Triplett Electrical Instrument Co., 286 Harmon Rd., Bluffton, Ohio
Waveforms, Inc., 333 Sixth Ave., New York 14, N. Y.
Western Radiation Lab., 1107 W. 24th St., Los Angeles 7, Calif.
Western Sound & Electric Labs., Inc., 805 S. Fifth St., Milwaukee 4, Wis.
Weston Electrical Instrument Corp., 614 Frelinghuysen Ave., Newark 5, N. J.

WASHERS—Laboratory Glassware

Brown Morse Co., Muskegan, Mich.
Fisher Scientific Co., 709 Forbes Ave., Pittsburgh 19, Pa.
Heinicke Instruments, 2035 Harding St., Hollywood, Fla.
Metalab Equipment Corp., 270 Duffy Ave., Hicksville, N. Y.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

WATER CONDITIONERS

Barnstead Still & Sterilizer Co., 222 Lanesville Terrace, Boston 31, Mass.
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 10
Bogue Electric Mfg. Co., 52 Iowa Ave., Paterson 3, N. J.
Crystal Research Labs., 33 Allyn St., Hartford, Conn.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
General Mills, Inc., Chemical Div., Kensington Rd., Kankakee, Ill.
Illinois Water Treatment Co., 858 Cedar St., Rockford, Ill.
Infilco, Inc., P. O. Box 5033, Tucson, Ariz.
Penfield Mfg. Co., Inc., Meriden, Conn.
Permutit Co., 330 W. 42nd St., New York 36, N. Y.
Versenes Inc., 875 Waverly St., Framingham, Mass.

WATER—Heavy

Bio-Rad Laboratories, 800 Delaware St., Berkeley, Calif.
Linick Chemical Co., 59 E. Madison St., Chicago 3, Ill.

WAXES

Armstrong Cork Co., 1010 Concord St., Lancaster, Pa.
Biwax Corp., 3445 Howard St., Skokie, Ill.
Borne Scrymser Co., 632 Front St., Elizabeth, N. J.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.
Glyco Products Co., Inc., 26 Court St., Brooklyn 2, N. Y.
Hommel, Co., O., 209-213 Fourth Ave., Pittsburgh, Pa.
Kellogg Co., M. W., Chemical Mfg. Div., P. O. Box 469, Jersey City 3, N. J.
Kessler Chemical Co., Inc., State Rd. & Cottman Ave., Philadelphia 35, Pa.
Zophar Mills, Inc., 112-130 26th St., Brooklyn 32, N. Y.

WINDOWS—Mica

DeMornay-Bonardi, Inc., 780 S. Arroyo Parkway, Pasadena, Calif.
DETECTOLAB, INC., 6544 N. Sheridan Rd., Chicago 26, Ill. ADV. PG. 147
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
Telectro Industries Corp., 35-16 37th St., Long Island City 1, N. Y.
Wakefield Industries, Inc., 5108 Grove St., Skokie, Ill.

WIRE—Slide, Calibrated

Alcar Instruments, Inc., 20-21 Wagaraw Rd., Fair Lawn, N. J.
Bond Electronics Corp., 60 Springfield Ave., Springfield, N. J.
Bourns Laboratories, 6135 Magnolia Blvd., Riverside, Calif.
Electro Measurements, Inc., 4312 S.E. Stark St., Portland 15, Ore.
Electro-Mec Laboratory, Inc., 21-09 43rd Ave., Long Island City, N. Y.
WELCH SCIENTIFIC CO., W. M., 1515 Sedgwick St., Chicago 10, Ill. ADV. PG. 148

X-RAY DIFFRACTION APPARATUS

Applied Research Labs., P. O. Box 1710, Glendale 5, Calif.
CENTRAL RESEARCH LABORATORIES, INC., Red Wing, Minn. ADV. PG. 12, 13
Jarrell-Ash Co., 26 Farwell St., Newtonville, Mass.
North American Philips Co., Inc., 750 S. Fulton Ave., Mt. Vernon, N. Y.
Picker X-Ray Corp., 25 S. Broadway, White Plains, N. Y.
St. John X-Ray Laboratory, Clifton, N. J.
X-Ray Dept. of General Electric Co., 4855 Electric Ave., Milwaukee, Wis.

X-RAY EQUIPMENT—Industrial

Applied Research Labs., P. O. Box 1710, Glendale 5, Calif.
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 10
Bracke-Seib X-Ray Co., Inc., 293 Third Ave., New York 10, N. Y.
Cinema-Television Ltd., Worsley Bridge Rd., London, S. E., 26, England
Falk & Co., Ltd., M., 5 Victoria St., London S. W. 1, England
Franklin Electronics, Inc., 415 W. Pike St., Philadelphia 40, Pa.
North American Philips Co., Inc., 750 S. Fulton Ave., Mt. Vernon, N. Y.
Picker X-Ray Corp., 25 S. Broadway, White Plains, N. Y.
Polaroid Corp., Cambridge 39, Mass.
St. John X-Ray Laboratory, Califon, N. J.
Sensitive Research Instrument Corp., 9 Elm Ave., Mt. Vernon, N. Y.
X-Ray Dept. of General Electric Co., 4855 Electric Ave., Milwaukee, Wis.

X-RAY TUBES

See TUBES, X-Ray

ZINC BROMIDE

See also VIEWING EQUIPMENT

Dow Chemical Co., Midland, Mich.
Harty Co., Inc., R. V., 1433 Sloman Ave., Detroit 11, Mich.
MICHIGAN CHEMICAL CORP., St. Louis, Mo. ADV. PG. 142

1954-1955 NUCLEONICS BUYERS' GUIDE

MANUFACTURERS INDEX

A listing of the companies engaged in the manufacture of all types of equipment, components and materials for use in the nuclear energy field. They are alphabetically arranged for convenient use and quick reference.

A. C. F. Electronics, Inc., Alexandria, Va.
Abbe Engineering Co., 50 Church St., New York 7, N. Y.
Abbott Laboratories, North Chicago, Ill.
Accurate Sheet Metal & Mfg. Works, 2336–38 Milwaukee Ave., Chicago 47, Ill.
Ace Electronics Associates, 125 Rogers Ave., Somerville 44, Mass.
Ace Engineering & Machine Co., Inc., 3642 N. Lawrence St., Philadelphia 40, Pa.
Ace Glass, Inc., Vineland, N. J.
Acheson Colloids Co., Div. of Acheson Industries, Inc., 1631 Washington Ave., Port Huron, Mich.
Acme Brick Co., P. O. Box 425, Fort Worth 1, Texas
Acme Electric Corp., 31 Water St., Cuba, N. Y.
Acme Electric Heating Co., Inc., 1205 Washington St., Boston, Mass.
Adams & Westlake Co., Michigan St., Elkhart, Ind.
Advance Electronics Co., 451 Highland Ave., Passaic, N. J.
Advanced Vacuum Products, Inc., 22 Liberty St., Stamford, Conn.
Aerco Corp., Paris Ave., Northvale, N. J.
Aero Research Instrument Co., 1901 N. Hermitage Ave., Chicago 22, Ill.
Aerocoil Inc., 24 Cliff St., Jersey City, N. J.
Aerohm Corp., 282 Moody St., Waltham 54, Mass.
Aeronautical Research Laboratories, General Mills, Inc., 2010 E. Hennepin Ave., Minneapolis 13, Minn.
Aerovox Corp., 740 Belleville Ave., New Bedford, Mass.
Aetna Plywood & Veneer Co., 1731 N. Elston Ave., Chicago 22, Ill.
Aetna Scientific Co., Second & Spring Sts., Everett 49, Mass.
Ahrendt Instrument Co., 4910 Calvert Rd., College Park, Md.
Air Associates, Inc., Teterboro, N. J.
Air Controls, Inc., 2312 Superior Ave., Cleveland 14, Ohio
Air Conversion Research Corp., 4107 N. Damen Ave., Chicago 18, Ill.
Aircraft-Marine Products, Inc., 2100 Paxton St., Harrisburg, Pa.
Aircraft-Marine Products, Inc., Chemicals & Dielectrics Div., 155 Park St., Elizabethtown, Pa.
Aircraft Transformer Corp., West & Willow Aves., Long Branch, N. J.
Airdesign, Inc., 241 Fairfield Ave., Upper Darby, Pa.
Aireco Inc., 2315 Second Ave., Carmen, Schenectady, N. Y.
Airflyte Electronics Co., 21 Cottage St., Bayonne, N. J.
Airmec Ltd., High Wycombe, Buckinghamshire, England
Airpax Products Co., Middle River, Baltimore 20, Md.
Airtron Inc., 1103 W. Elizabeth Ave., Linden, N. J.
Alberene Stone Corp. of Virginia, 419 Fourth Ave., New York 16, N. Y.
Alcar Instruments Inc., 20–21 Wagaraw Rd., Fair Lawn, N. J.
Alco Electronics Mfg. Co., 3 Wolcott Ave., Lawrence, Mass.
Alco Mfg. Company, 4011 Cuming St., Omaha 3, Neb.
Alco Valve Co., 865 Kingsland Ave., St. Louis 5, Mo.
Alden Electronics & Impulse Recording Equipment Co., Westboro, Mass.
Alden Products Co., 112 N. Main St., Brockton 64, Mass.
Alden Systems Co., Alden Research Center, Westboro, Mass.
Alderson Research Laboratories, Inc., 10 E. 38th St., New York 16, N. Y.
Alfax Paper & Engineering Co., P. O. Box 125, Westboro, Mass.
Allegany Instrument Co., Inc., Cumberland, Md.
Allegheny Ludlum Steel Corp., 2020 Oliver Bldg., Pittsburgh 22, Pa.
Allen-Bradley Co., 136 W. Greenfield Ave., Milwaukee 4, Wis.
Alliance Manufacturing Co., Lake Park Blvd., Alliance, Ohio
Allied Radio Corp., 100 N. Western Ave., Chicago 80, Ill.
Allis-Chalmers Mfg. Co., 935 S. 70th St., Milwaukee 1, Wis.
Allis Co., Louis, 427 E. Stewart St., Milwaukee 7, Wis.
Alloy Metal Wire Div., H. K. Porter Co., Inc. of Pittsburgh, 13th & Pennsylvania Ave., Prospect Park, Pa.
Alloy Steel Products Co., 1329 W. Elizabeth Ave., Linden, N. J.
Aloe Scientific Div., A. S. Aloe Co., 5655 Kingsbury Blvd., St. Louis 12, Mo.
Alpha Metals Inc., P. O. Box 34, 56 Water St., Jersey City 4, N. J.
Aluminum Co. of America, Alcoa Bldg., Pittsburgh 19, Pa.
Ambory Corp., 21320 Stephenson, Hazel Park, Mich.
Ameray Corp., Route #46, Kenvil, N. J.
Amercoat Corp., 4809 Firestone Blvd., South Gate, Calif.
American Brass Co., Waterbury 20, Conn.
American Chronoscope Corp., 316 W. First St., Mt. Vernon, N. Y.
American Copper & Brass Works, Inc., Cincinnati 2, Ohio
American Electric Motors, Inc., 4811 Telegraph Rd., Los Angeles 22, Calif.
American Electronic Laboratories, Inc., 641 Arch St., Philadelphia 6, Pa.
American Gas Furnace Co., 130 Spring St., Elizabeth, N. J.
American Instrument Co., Inc., 8030 Georgia Ave., Silver Spring, Md.
American Lava Corp., Chattanooga 5, Tenn.
American Locomotive Co., Bldg. 143, Schenectady, N. Y.
American Machine & Foundry Co., Broadway at Kennedy Rd., Buffalo 12, N. Y.
American Machine & Foundry Co., Atomic Energy Dept.; Contract Div., 261 Madison Ave., New York 16, N. Y.
American Machine & Foundry Co., Electronics Div., 1085 Commonwealth Ave., Boston 15, Mass.
American Machine & Metals, Inc., East Moline, Ill.
American Machine Products Co., Marshalltown, Iowa
American Optical Co., 28 Mechanic St., Southbridge, Mass.
American Optical Co., Instrument Div., Buffalo 15, N. Y.
American Oxygen Service Corp., 600 Essex St., Harrison, N. J.
American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.
American Platinum Works, N. J. R. R. Ave. at Oliver St., Newark, N. J.
American Polymer Corp., 101 Foster St., Peabody, Mass.
American Products Mfg. Co., Inc., 8127–33 Oleander St., New Orleans 18, La.
American Relay & Controls, Inc., 3621 W. Howard St., Skokie, Ill.
American Research Corp., 11 Brook St., Bristol, Conn.
American Resinous Chemicals Corp., 103 Foster St., Peabody, Mass.
American Silver Co., 36–07 Prince St., Flushing, N. Y.
American Television & Radio Co., 300 E. Fourth St., St. Paul 1, Minn.
American Thermo Electric Co., 198–11 Hollis Ave., Hollis 12, N. Y.
American Time Products, Inc., 580 Fifth Ave., New York 36, N. Y.
Amersil Co., Inc., 683 Ramsey Ave., Hillside, N. J.
Amperex Electronic Corp., 230 Duffy Ave., Hicksville, N. Y.
Ampex Corp., 934 Charter St., Redwood City, Calif.
Amplifier Corp. of America, 396 Broadway, New York 13, N. Y.
Anchor Metal Co., 224 Boerum St., Brooklyn 6, N. Y.
Anchor Plastics Company, Inc., 36–36 36th St., Long Island City 6, N. Y.
Andersen Laboratories, Inc., 39 Talcott Road, West Hartford 10, Conn.
Anderson Valve Works, 9th & Adams Ave., Marion, Ind.
Anelex Corp., 150 Causeway St., Boston 14, Mass.
Anetsberger Bros., Northbrook, Ill.
Angel & Co., Inc., H. Reeve, 52 Duane St., New York 7, N. Y.
Ansco Division, General Aniline & Film Corp., Binghamton, N. Y.
Antara Chemicals, Div. of General Aniline & Film Corp., 435 Hudson St., New York 14, N. Y.
Anton Electronic Labs., Inc., 1226–38 Flushing Ave., Brooklyn 37, N. Y.
Applied Physics Corp., 362 W. Colorado Blvd., Pasadena 1, Calif.
Applied Research Labs., P. O. Box 1710, Glendale 5, Calif.
Applied Science Corp. of Princeton, P. O. Box 44, Princeton, N. J.
Arco Co., 7301 Bessemer Ave., Cleveland 27, Ohio
Arenberg Ultrasonic Laboratory, 94 Green St., Jamaica Plain 30, Mass.
Arma Corp., Old Country Rd., Garden City, N. Y.
Armstrong Cork Co., 1010 Concord St., Lancaster, Pa.
Arnold Engineering Co., Marengo, Ill.
Arrow-Hart & Hegeman Electric Co., 103 Hawthorn St., Hartford 6, Conn.
Asheville-Schoonmaker Mica Co., Inc., 900 Jefferson Ave., Newport News, Va.
Askania Regulator Co., 240 E. Ontario St., Chicago 11, Ill.
Assembly Products, Inc., Chagrin Falls 6, Ohio
Associated Engineering Corp., of Boston 65 Kent St., Brookline 46, Mass.
Associated Engineering & Mfg. Corp., Glen Ridge, N. J.
Associated Research, Inc., 3788 W. Belmont, Chicago, Ill.
Associated Specialties Co., 1751 Main St., Orefield, Pa.
Associated Valve & Engineering Co., 1150 W. Marquette Rd., Chicago 21, Ill.
Astell & Co., Inc., John B., 90 W. Broadway, New York 7, N. Y.
Astron Corp., 255 Grant Ave., East Newark, N. J.
Atlantic Metal Hose Co., Inc., 308 Dyckman St., New York 34, N. Y.
Atlas Coil, Inc., Cottage St., Derby, Conn.
Atlas Engineering Co., 3 Edgewood St., Roxbury, Mass.
Atlas Mineral Products Co., 131 Norman St., Mertztown, Pa.
Atomic Energy of Canada, Ltd., Commercial Products Div., P. O. Box 93, Ottawa, Ontario, Canada
Atomic Instrument Co., 84 Massachusetts Ave., Cambridge 39, Mass.
Atomic Power & Chemicals Corp., 201 Main St., White Plains, N. Y.
Atomic Research Laboratory, 2633 Santa Monica Blvd., Santa Monica, Calif.
Atomlab, Inc., 489 Fifth Ave., New York 17, N. Y.
Auburn Mfg. Co., 500 Stack St., Middletown, Conn.
Audio Development Co., 2833 13th Ave., S., Minneapolis 7, Minn.
Audio Equipment Co., Inc., 805 Middle Neck Rd., Great Neck, N. Y.
Audio Instrument Company, Inc., 133 W. 14th St., New York 11, N. Y.
Audio Products Corp., 2265 Westwood Blvd., Los Angeles 64, Calif.
Aurora Pump Co., 48 Loucks St., Aurora, Ill.
Austin Co., 16112 Euclid Ave., Cleveland 12, Ohio
Automatic Switch Co., 391 Lakeside Ave., Orange, N. J.
Automatic Temperature Control Co., Inc., 5206 Pulaski Ave., Philadelphia 44, Pa.
Autotron Co., Box 722, Danville, Ill.
Avien, Inc., 58–15 Northern Blvd., Woodside 77, N. Y.
Avion Instrument Corp., Div. of American Car & Foundry Co., 295 State Highway #17, Paramus, N. J.

B-I-F Industries, Inc., P. O. Box 1342, Providence, R. I.
Babcock & Wilcox Co., 161 E. 42nd St., New York 17, N. Y.
Bache & Co., Semon, 636 Greenwich St., New York 14, N. Y.
Baer Co., N. S., 9 Montgomery Ave., Hillside, N. J.
Baird Associates, Inc., 33 University Rd., Cambridge 38, Mass.
Bakelite Co., A Div. of Union Carbide & Carbon Corp., 30 E. 42nd St., New York 17, N. Y.
Baker Chemical Co., J. T. Phillipsburg, N. J.
Baker & Co., Inc., 113 Astor St., Newark 5, N. J.
Baker Co., Inc., Maplewood, Maine
Baldwin Instrument Co., Ltd., Brooklands Works, Dartford, Kent, England
Baldwin-Lima-Hamilton Co., Philadelphia, Pa.
Ballantine Laboratories, Inc., Boonton, N. J.
Barker & Williamson, 235 Fairfield Ave., Upper Darby, Pa.
Barium & Chemicals, Inc., Willoughby, Ohio
Barnes Co., W. F. & John, 201 S. Water St., Rockford, Ill.

NUCLEAR AND ALLIED PRODUCTS

Barnes Development Co., 213 W. Baltimore Pike, Lansdowne, Pa.
Barnstead Still & Sterilizer Co., 222 Lanesville Terrace, Boston 31, Mass.
Bar-Ray Products, Inc., 209 25th St., Brooklyn 32, N. Y.
Bausch & Lomb Optical Co., 630 St. Paul St., Rochester 2, N. Y.
Beach-Russ Co., 50 Church St., New York, N. Y.
Beck & Sons, Inc., 256 Mott St., New York 12, N. Y.
Beck's Inc., 298–300 E. Fifth St., St. Paul 1, Minn.
Beckman, Inc., Arnold O., 1020 Mission St., South Pasadena, Calif.
Beckman & Whitley, Inc., San Carlos, Calif.
Beckman Instruments, Inc., 820 Mission St., South Pasadena 183, Calif.
Beede Electrical Instrument Co., Inc., Penacook, N. H.
Bel Fuse, Inc., 311 Mountain Rd., Union City, N. J.
Bell Sound Systems, Inc., 555 Marion Rd., Columbus 7, Ohio
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Belock Instrument Corp., 13–11 111th St., College Point, N. Y.
Bendix Aviation Corp., Cincinnati Div., 203 W. Third St., Cincinnati 2, Ohio
Bennett Products Mfg. Co., Box 1055, Palo Alto, Calif.
Berkeley Div. of Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif.
Berkshire Laboratories, 588 Beaver Pond Rd., Lincoln, Mass.
Berndt-Bach, Inc., 6900 Romaine St., Los Angeles 38, Calif.
Beryllium Corp., Reading, Pa.
Beta Electric Corp., 333 E. 103rd St., New York, 29, N. Y.
Bethlehem Apparatus Co., Inc., Front & Depot Sts., Hellertown, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Beva Laboratory, 1640 Olden Ave., Ext., Trenton 9, N. J.
Biddle Co., James G., 1316 Arch St., Philadelphia 7, Pa.
Biggs Co., Carl H., 2255 Barry Ave., West Los Angeles, Calif.
Bill Jack Scientific Instrument Co., P. O. Box C-39, Solana Beach, Calif.
Bird Electronic Corp., 1800 E. 38th St., Cleveland 14, Ohio
Bio-Rad Laboratories, 800 Delaware St., Berkeley, Calif.
Bishop & Co., J., Malvern, Pa.
Bishop Mfg. Co., 10 Canfield Rd., Cedar Grove, N. J.
Bisonite Co., Inc., P. O. Box 84, Kenmore Station, Buffalo 17, N. Y.
Biwax Corp., 3445 Howard St., Skokie, Ill.
Blickman, Inc., S., 7900 Gregory Ave., Weehawken, N. J.
Boeing Airplane Co., Seattle Div., Seattle 14, Wash.
Bogart Mfg. Corp., 315 Siegel St., Brooklyn 6, N. Y.
Bogen Co., Inc., David, 29 Ninth Ave., New York 14, N. Y.
Bogue Electric Mfg. Co., 52 Iowa Ave., Paterson 3, N. J.
Bomac Laboratories, Inc., Salem Rd., Beverly, Mass.
Bond Electronics Corp., 60 Springfield Ave., Springfield, N. J.
Boonton Radio Corp., Boonton, N. J.
Borden Co., Chemical Div., 350 Madison Ave., New York 17, N. Y.
Borg Corp., George W., Borg Equipment Div., Janesville, Wis.
Borne Scrymser Co., 632 S. Front St., Elizabeth, N. J.
Bourns Laboratories, 6135 Magnolia Blvd., Riverside, Calif.
Bowmar Instrument Corp., 2415 Pennsylvania Ave., Fort Wayne, Ind.
Bowser Technical Refrigeration Div., Bowser, Inc., Terryville, Conn.
Bracke-Seib X-Ray Co., Inc., 293 Third Ave., New York 10, N. Y.
Bradley Laboratories, Inc., 168 Columbus Ave., New Haven 10, Conn.
Bram Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Branson Corp., 113 Cornelia St., Boonton, N. J.
Branson Instruments, Inc., 438 Fairfield Ave., Stamford, Conn.
Breeze Corporations, Inc., 700 Liberty Ave., Union N. J.
Breuer Electric Mfg. Co., 5100 N. Ravenswood Ave., Chicago 40, Ill.
Brew & Co., Inc., Richard D., Airport Rd., Concord, N. H.
Bridgeport Brass Co., 30 Grand St., Bridgeport, Conn.
Bright Star Industries, 600 Getty Ave., Clifton, N. J.
Brighton Copper Works, Inc., 820 State Ave., Cincinnati 4, Ohio
Bristol Co., Waterbury 20, Conn.
British Electronic Sales Co., 23–03 45th Rd., Long Island City 1, N. Y.
Bristol Engineering Corp., Lincoln Ave. & Pond St., Bristol 1, Pa.
Brookfield Engineering Labs., Inc., Porter St., Stoughton, Mass.
Brooklyn Hospital Equipment Co., Inc., 196 Lexington Ave., New York, N. Y.
Brooks Rotameter Co., Box A-1347, Lansdale, Pa.
Brown Morse Co., Muskegon, Mich.
Browning Laboratories, Inc., 750 Main St., Winchester, Mass.
Brush Beryllium Co., 4301 Perkins Ave., Cleveland 3, Ohio
Brush Electronics Co., 3405 Perkins Ave., Cleveland 14, Ohio
Buck Engineering Co., Inc., 37–41 Marcy St., Freehold, N. J.
Bud Radio, Inc., 2118 E. 55th St., Cleveland 3, Ohio
Buffalo Weaving & Belting Co., Buffalo 7, N. Y.
Buggie & Co., H. H., 726 Stanton St., Toledo, Ohio
Buhl Optical Co., 1009 Beech Ave., Pittsburgh 33, Pa.
Builders-Providence, Inc., Div. of B-I-F Industries, Inc., 530 Harris Ave., Providence 1, R. I.
Bullard Co., E. D., 275 Eighth St., San Francisco 3, Calif.
Burgess Battery Co., Battery Div., Freeport, Ill.
Burke & James, Inc., 321 S. Wabash, Chicago, Ill.
Burlington Instrument Co., 203 N. Third St., Burlington, Iowa
Burndept Ltd., West St., Erith, Kent, United Kingdom
Burrell Corp., 2223 Fifth Ave., Pittsburgh, Pa.
Burroughs Corp., Electronic Instruments Div., 1209 Vine St., Philadelphia 7, Pa.

CBS-Hytron, a Division of Columbia Broadcasting System, Inc., 100 Endicott St., Danvers, Mass.
C.G.S. Laboratories, Inc., 391 Ludlow St., Stamford, Conn.
Callery Chemical Co., Callery, Pa.
Caltron Co., 1406 S. Hobart Blvd., Los Angeles 6, Calif.
Cambridge Filter Corp., 738 Erie Blvd., E., Syracuse, N. Y.
Cambridge Instrument Co., Inc., Grand Central Terminal, New York 17, N. Y.
Cambridge Thermonic Corp., 445 Concord Ave., Cambridge 38, Mass.
Canadian Radium & Uranium Corp., 630 Fifth Ave., New York 20, N. Y.
Canister Co., Inc., Phillipsburg, N. J.
Cannon Electric Co., 3209 Humboldt St., Los Angeles 31, Calif.
Canoga Corp., 5955 Sepulveda Blvd., Van Nuys, Calif.
Carbide & Carbon Chemicals Co., A Div. of Union Carbide & Carbon Corp., 30 E. 42nd St., New York 17, N. Y.
Carboline Co., 331 Thorton, St. Louis 19, Mo.
Carboloy Dept. of General Electric Co., 11139 East Eight Mile Blvd., Detroit 32, Mich.
Carborundum Co., Globar Div., Niagara Falls, N. Y.
Cardwell Electronic Productions Corp., Allen D., 97 Whiting St., Plainville, Conn.
Carpenter Steel Co., Alloy Tube Div., Union, N. J.
Carpenter Steel Co., Reading, Pa.
Carrier Corp., 300 S. Geddes St., Syracuse 1, N. Y.
Carter Motor Co., 2644 N. Maplewood Ave., Chicago 47, Ill.
Carver Inc., Fred S., 1 Chatham Rd., Summit, N. J.
Celco Constantine Engineering Labs., Co., Island Ave., Mahwah, N. J.
Central Research Laboratories, Inc., Red Wing, Minn.
Central Sales & Mfg. Corp., 2 Richwood Place, Denville, N. J.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Central Transformer Co., 910 W. Jackson Blvd., Chicago 7, Ill.
Centralab Div. of Globe-Union Inc., 900 E. Keefe Ave., Milwaukee 1, Wis.
Century Electric Co., 1806 Pine St., St. Louis 3, Mo.
Century Fan & Ventilator Co., 25 Cedar St., Stamford, Conn.
Century Geophysical Corp., P. O. Box 6216, Pine Station, Tulsa, Okla.
Cerro de Pasco Corp., 40 Wall St., New York 5, N. Y.
Chandler & Stedman, 398 Newton St., Waltham 54, Mass.
Chase Brass & Copper Co., Inc., 236 Grand St., Waterbury 20, Conn.
Chassis Trak Corp., 6250 E. Iona Rd., Indianapolis, Ind.
Chatham Electronics Corp., Livingston, N. J.
Chempump Corp., 1300 E. Mermaid Lane, Philadelphia 18, Pa.
Chicago Standard Transformer Corp., Addison & Elston, Chicago 18, Ill.
Churchill Lighting Corp., 344 Franklin St., Melrose 76, Mass.
Cima Corp., 119 Braintree St., Allston 34, Mass.
Cinema Engineering Co., Div. of Aerovox Corp., 1100 Chestnut St., Burbank, Calif.
Cinema-Television Ltd., Worsley Bridge Rd., London, S. E. 26, England
Clarage Fan Co., 719 Porter St., Kalamazoo, Mich.
Clark Bros. Co., Div. of Dresser Operations, Inc., Lincoln Ave. & Fifth St., Olean, N. Y.
Clark Controller Co., 1146 E. 152nd St., Cleveland 10 Ohio
Clark Instruments, Div. of National Electrical Machine Shops, Inc., 919 Jesup-Blair Drive, Silver Spring, Md.
Clary Multiplier Corp., 408 Junipero St., San Gabriel, Calif.
Clarostat Mfg. Co., Inc., Dover, N. H.
Clegg Laboratories, Inc., 142 S. Livingston Ave., Livingston, N. J.
Clifford Mfg. Co., Grove St., Waltham, Mass.
Clifton Precision Products Co., Broadway & Marple Ave., Clifton Heights, Pa.
Clough Brengle Co., 6014 N. Broadway, Chicago, Ill.
Coleman Instruments, Inc., Maywood, Ill.
Collins Radio Co., Cedar Rapids, Iowa
Columbia Electric Mfg. Co., 4519 Hamilton Ave., N. E. Cleveland 14, Ohio
Columbia Technical Corp., 5 E. 57th St., New York 22, N. Y.
Comar Electric Co., 3349 W. Addison St., Chicago 18, Ill.
Communication Accessories Co., Red Bridge Rd., Hickman Hills, Mo.
Communication Measurement Labs., Inc., 350 Leland Ave., Plainfield, N. J.
Computer Control Co., Inc., 92 Broad St., Babson Park 57, Mass.
Computing Devices of Canada, Ltd., P. O. Box 508, Ottawa 4, Ontario, Canada
Condenser Products Co., 140 Hamilton St., New Haven, Conn.
Connecticut Hard Rubber Co., New Haven 9, Conn.
Connecticut Telephone & Electric Corp., 70 Brittania St., Meriden, Conn.
Conoflow Corp., 2100 Arch St., Philadelphia 3, Pa.
Conrad Inc., 141 Jefferson St., Holland, Mich.
Consolidated Engineering Corp., 300 N. Sierra Madre Villa, Pasadena 15, Calif.
Consolidated Siphon Supply Co., Inc., 24 Wooster St., New York, N. Y.
Consolidated Vacuum Corp., 1775 Mt. Read Blvd., Rochester 3, N. Y.
Constantin & Co., L. L., Route 46 & Franklin Ave., Lodi, N. J.
Continental-Diamond Fibre Co., Newark, Del.
Continental Electric Co., Inc., 334 Ferry St., Newark 5, N. J.
Control Electronics Co., Inc., 1925 New York Ave., Huntington Station, N. Y.
Cooper Co., D. C., 1467 S. Michigan Ave., Chicago, Ill.
Cooper-Hewitt Electric Co., 721 Grand St., Hoboken, N. J.
Cornell-Dubilier Electric Corp., South Plainfield, N. J.
Corning Glass Works, Corning, N. Y.
Cossor, Ltd., 301 Windsor St., Halifax, N.S., Canada
Couch Co., Inc., S. H., North Quincy 71, Mass.
Cox & Co., 115 E. 23rd St., New York 10, N. Y.
Cramer Co., Inc., The, R. W., Box 13, Centerbrook, Conn.
Crane Packing Co., 1800 Cuyler Ave., Chicago 13, Ill.
Cross Co., H., 15 Beekman St., New York 38, N. Y.
Crowley & Co., Inc., Henry L., West Orange, N. J.
Crucible Steel Co. of America, Henry W. Oliver Bldg., P. O. Box 88, Pittsburgh 30, Pa.
Crystal Research Labs., 33 Allyn St., Hartford, Conn.
Cubic Corp., 2841 Canon St., San Diego 6, Calif.
Curta Calculator Co., 3851 W. Madison St., Chicago 24, Ill.
Curtiss-Wright Corp., Electronics Div., Carlstadt, N. J.
Custom Scientific Instruments, Inc., P. O. Box 170, Arlington, N. J.
Cutler-Hammer, Inc., 412 N. 12th St., Milwaukee 1, Wis.
Cyclotron Specialties Co., Moraga 8, Calif.

D & R Ltd., 402 E. Gutierrez St., Santa Barbara, Calif.
Dage Electronics Div., Thompson Products, Inc., 69 N. Second St., Beech Grove, Ind.
Dale Products, Inc., Columbus, Neb.
Dallons Laboratories, Inc., 5066 Santa Monica Blvd., Los Angeles, Calif.
Dalmo Victor Co., 1414 El Camino Real, San Carlos, Calif.
Dalmotor Co., 1375 Clay St., Santa Clara, Calif.
Daven Co., The, 191 Central Ave., Newark 4, N. J.
Davies Laboratories, Inc., 4705 Queensbury Rd., Riverdale, Md.
Davis Emergency Equipment Co., Inc., 252 Halleck St., Newark, N. J.
Day Co., The, 820 Third Ave., NE, Minneapolis 13, Minn.
Daystrom Instrument Co., Archbald, Pa.
Dayton Electric Mfg. Co., 126 S. Oakley Blvd., Chicago 12, Ill.
Decade Instrument Co., P. O. Box 153, Caldwell N. J.

DeJur-Amsco Corp., 45-01 Northern Blvd., Long Island City 1, N. Y.
DeMornay-Bonardi, Inc., 780 S. Arroyo Parkway, Pasadena, Calif.
Denison Engineering Co., 1160 Dublin Road, Columbus 16, Ohio
Detectolab, Inc., 6544 N. Sheridan Rd., Chicago 26, Ill.
Detectron Corp. 5420 Vineland Ave., North Hollywood, Calif.
DeVilbiss Co., 300 Phillips Ave., Toledo, Ohio
Devoe & Raynolds Co., Inc., 787 First Ave., New York, N. Y.
DeWitt Development Co., 3008 W. 127th St., Blue Island, Ill.
Diamond Power Specialty Corp., Lancaster, Ohio
Dice Co., J. W., Englewood 41, N. J.
Dietz Co., Henry G., 12-16 Astoria Blvd., Long Island City 2, N. Y.
Dietz Design & Mfg. Co., Grandview 6, Mo.
Distillation Products Industries, A Div. of Eastman Kodak Co., Rochester 3, N. Y.
Division Lead Co., 7742 W. 61st Place, Summit, Ill.
Doehler Metal Furniture Co., Inc., 194 Lexington Ave., New York, N. Y.
Doelcam Corp., 1400 Soldiers Field Rd., Boston 35, Mass.
Douglas Radio Labs., 176 Norfolk Ave., Boston 19, Mass.
Dow Chemical Co., Midland, Mich.
Dow Corning Corp., Midland, Mich.
Driver-Harris Co., Harrison, N. J.
Du-Co Ceramics Co., Box 587, Butler 8, Pa.
Du Pont de Nemours & Co., Inc., E. I., Wilmington 98, Del.
Dumont-Airplane & Marine Instruments, Inc., 15 William St., New York, N. Y.
DuMont Labs., Inc., Allen B., Bloomfield Ave., Clifton, N. J.
Durez Plastics & Chemicals, Inc., 1921 Walck Rd., North Tonawanda, N. Y.
Durlach Can & Iron Works, 168 7th, Brooklyn, N. Y.
Dwyer Engineering Co., Inc., Box 483, Nashua, N. H.
Dyna Labs., Inc., 1075 Stewart Ave., Garden City, N. Y.

Eagle-Picher Co., Cincinnati, Ohio
Eagle Signal Corp., 202 20th St., Moline, Ill.
Eastern Air Devices, Inc., 385 Central Ave., Dover, N. H.
Eastern Precision Resistor Corp., 130-11 90th Ave., Richmond Hill, N. Y.
Eastman Kodak Co., Rochester 3, N. Y.
Eaton-Dikeman Co., Filtertown, Mount Holly Springs, Pa.
Eberbach Corp., Ann Arbor, Mich.
Eclipse Fuel Engineering Co., 1100 Buchanan, Rockford, Ill.
Eclipse-Pioneer Div., Bendix Aviation Corp., Teterboro, N. J.
Eco Engineering Co., 12 New York Ave., Newark 1, N. J.
Edcliff Instruments, 383 N. Foothill Blvd., Pasadena 8, Calif.
Edin Co., Inc., 207 Main St., Worcester, Mass.
Edison Inc., Thomas A., Instrument Div., West Orange, N. J.
Edmund Scientific Co., 502 E. Gloucester Pike, Barrington, N. J.
Eicor, Inc., 1501 W. Congress St., Chicago 7, Ill.
Eisler Engineering Co., 760 S. 13th St., Newark 3, N. J.
Eitel-McCullough, Inc., San Bruno, Calif.
Ekco Electronics Ltc., Ekco Works, Southend-on-Sea, Essex, England
Electric Auto-Lite Co., Instrument & Gauge Div., Toledo 1, Ohio
Electric Blower Co., 352 Atlantic Ave., Boston 10, Mass.
Electric Indicator Co., Inc., Camp Ave., Springdale, Conn.
Electric Machinery Mfg. Co., 1331 N. E. Tyler St., Minneapolis 13, Minn.
Electric Products Co., 1725 Clarkstone Rd., Cleveland 12, Ohio
Electric Regulator Corp., Norwalk, Conn.
Electric Speciality Co., 211 South St., Stamford, Conn.
Electric Steel Foundry Co., 2141 N. W. 25th Ave., Portland 10, Ore.
Electrical Facilities, Inc., 4224 Holden St., Oakland 8, Calif.
Electrical Industries, Div. of Amperex Electronic Corp., 42 Summer Ave., Newark 4, N. J.
Electrical & Physical Instrument Corp., 42-19 27th St., Long Island City 1, N. Y.
Electro Chemical Supply & Engineering Co., 750 Broad St., Emmaus, Pa.
Electro-Coatings, Inc., 1662 W. Fullerton Ave., Chicago 14, Ill.
Electro Engineering Products Co., 609 W. Lake St. Chicago, Ill.
Electro Impulse Labs., 62 White St., Red Bank, N. J.
Electro Measurements, Inc., 4312 S. E. Stark St., Portland 15, Ore.
Electro-Mec Laboratory, Inc., 21-09 43rd Ave., Long Island City, N. Y.
Electro-Mechanical Research, Inc., 64 Main St., Ridgefield, Conn.
Electro Medical Lab., Inc., South Woodstock 6, Vt.
Electro Metallurgical Co., A Div. of Union Carbide & Carbon Corp., 32 E. 42nd St., New York 17, N. Y.
Electro Motive Mfg. Corp., South Park & John St., Willimantic, Conn.
Electro-Physics Co., 287-L Broadway, New York 7, N. Y.
Electro Products Labs. Inc., 4501 N. Ravenswood, Chicago 6, Ill.
Electro Technical Products Div. of Sun Chemical Corp., 113 E. Centre St., Nutley, N. J.
Electrodyne Co., Endicott St., Norwood, Mass.
Electronic Associates, Inc., Long Branch, N. J.
Electronic Components, Inc., 55 E. 11th St., Paterson, N. J.
Electronic Computer Div., Underwood Corp., 35-10 36th Ave., Long Island City 6, N. Y.
Electronic Control Corp., 1573 E. Forest, Detroit 7, Mich.
Electronic Corp. of America, Fireye Div., 720 Beacon St., Boston, Mass.
Electronic Engineering Associates Ltd., 1040 Brittan Ave., San Carlos, Calif.
Electronic Instrument Co., Inc., 84 Withers St., Brooklyn 11, N. Y.
Electronic Measurements Co., Inc., Lewis St. & Maple Ave., Eatontown, N. J.
Electronic Mechanics, Inc., 101 Clifton Blvd., Clifton, N. J.
Electronic Products Co., 111 E. Third St., Mount Vernon, N. Y.
Electronic Research Associates, Inc., 715 Main St., North Caldwell, N. J.
Electronic Tube Corp., 1200 E. Mermaid Lane, Philadelphia 18, Pa.
Electrons, Inc., 127 Sussex Ave., Newark 3, N. J.
Electrovent Fan & Mfg. Co., 812 W. Lake St., Chicago 7, Ill.
Elektro-Serv Co., 480 Johnson Ave., Brooklyn 37, N. Y.
Elly Electronics Corp., 20-21 Wagaraw Rd., Box 395, Fair Lawn, N. J.
Elm Laboratories, 18 South Broadway, Dobbs Ferry, N. Y.
El-Tronics, Inc., 5th & Noble Sts., Philadelphia 23, Pa.
Embassy Engineering Corp., 673 Elton Ave., New York 51, N. Y.
Emerson & Cuming Inc., 869 Washington St., Canton, Mass.
Emerson-Sack Warner Corp., 150 Dorchester Ave., Souh Boston 27, Mass.
Empire Electronics Co., Inc., 166 River St., Paterson, N. J.
Empire State Laboratories, Inc., 2608 Merrick Rd., Bellmore, N. Y.
Endevco Corp., 689 S. Fair Oaks Ave., Pasadena, Calif.
Engelhard, Inc., Charles, 850 Passaic St., East Newark, N. J.
Engineering Corp. of America, 201 Grove St., Westfield, N. J.
Environmental Equipment Corp., 369 Linden St., Brooklyn, N. Y.
Epco Electronics, Inc., 140 Liberty St., New York, N. Y.
Eppley Co., Newport, R. I.
Epsco, Incorporated, 126 Massachusetts Ave., Boston, Mass.
Erie Resistor Corp., 644 W. 12th St., Erie, Pa.
Ertel Engineering Corp., 8 N. Front St., Kingston, N. Y.
Ess Instrument Co., 98 S. Washington Ave., Bergenfield, N. J.
Essex Electronics, Springfield Ave., Berkeley Heights, N. J.
Esterline-Angus Co., Inc., P. O. Box 596, Indianapolis 6, Ind.
Exact Weight Scale Co., 944 W. Fifth Ave., Columbus 8, Ohio

Fairbanks Co., The, 393 Lafayette St., New York 3, N. Y.
Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago 5, Ill.
Fairchild Camera & Instrument Corp., Robbins Lane, Syosset, N. Y.
Fairchild Camera & Instrument Corp., Potentiometer Div., Hicksville, N. Y.
Fairchild Recording Equipment Corp., 164th St. & 7th Ave., Whitestone, N. Y.
Falk & Co., Ltd., M., 5 Victoria St., London S. W. 1, England
Falstrom Company, 7 Falstrom Court, Passaic, N. J.
Fansteel Metallurgical Corp., North Chicago, Ill.
Farmer Electric Co., 21 Mossfield Rd., Waban 68, Mass.
Farrand Optical Co., Inc., Bronx Blvd., at E. 238th St., New York 70, N. Y.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Fasco Industries, Inc., Rochester 2, N. Y.
Federal Mfg. & Engineering Corp., 211 Steuben St., Brooklyn 5, N. Y.
Federal Telecommunication Labs., A Div. of International Telephone & Telegraph Corp., 500 Washington Ave., Nutley, N. J.
Federal Telephone & Radio Co., A Div. of International Telephone & Telegraph Corp., 100 Kingland Rd., Clifton, N. J.
Federated Metals Div., American Smelting & Refining Co., 120 Broadway, New York 5, N. Y.
Feiler Engineering & Mfg. Co., 8026 N. Monticello Ave., Skokie, Ill.
Felt Products Mfg. Co., 1504 Carroll Ave., Chicago 7, Ill.
Fenwal Inc., 120 Pleasant St., Ashland, Mass.
Ferner Co., R. Y., 110 Pleasant St., Malden, Mass.
Ferranti Electric Co., 30 Rockefeller Plaza, New York 20, N. Y.
Ficklen, III, Joseph B., 1848 E. Mountain St., Pasadena 7, Calif.
Fielden Instrument Div., Robertshaw-Fulton Controls Co., 2920 N. 4th St., Philadelphia 33, Pa.
Filtron Co., Inc., 131-05 Fowler Ave., Flushing, N. Y.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Fish-Schurman Corp., 70 Portman Rd., New Rochelle, N. Y.
Fisher Engineering, Inc., 2060 U. S. 24 East, P. O. Box 327, Huntington, Ind.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Five Star Co., The, West Main St., Plantsville, Conn.
Fleischman, Burd & Co., Inc., 22 W. 48th St., New York 36, N. Y.
Fleming Radio (Development) Ltd., 18-20 Laystall St., London, E. C. 1, England
Flexitallic Gasket Co., 8th & Bailey Sts., Camden 2, N. J.
Flexonics Corp., 1315 S. Third Ave., Maywood, Ill.
Flintkote Co., 30 Rockefeller Plaza, New York 30, N. Y.
Fluke Mfg. Co., Inc., John, 1111 W. Nickerson St., Seattle 99, Wash.
Foote Mineral Co., 18 W. Chelten Ave., Philadelphia 44, Pa.
Ford Instrument Co., Div. of Sperry Corp., 31-10 Thomson Ave., Long Island City, N. Y.
Forter-Teichmann Co. Clark Bldg., Pittsburgh, Pa.
Foster Engineering Co., Union, N. J.
Foster Pump Works, Inc., 50 Washington & Front Sts., Brooklyn 1, N. Y.
Foster Wheeler Corp., 165 Broadway, New York 6, N. Y.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Franklin Electronics, Inc., 415 W. Pike St., Philadelphia 40, Pa.
Fredericks Co., George E., Bethayres, Pa.
Freed, Inc., J. Melvin, Perkasie, Pa.
Freed Transformer Co., Inc., 1736 Weirfield St., Brooklyn 27, N. Y.
Frenchtown Porcelain Co., Trenton 9, N. J.
Friez Instrument, Div. of Bendix Aviation Corp., 1454 Taylor Ave., Baltimore 4, Md.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville 1, Tenn.
Furst Electronics, Inc., 3330-A W. Lawrence Ave., Chicago 25, Ill.

G-M Laboratories, Inc., 4336 N. Knox Ave., Chicago 41, Ill.
G-V Controls, Inc., 28 Hollywood Plaza, East Orange, N. J.
Gaertner Scientific Corp., 1237 Wrightwood Ave., Chicago, Ill.
Garde Mfg. Co., 588 Eddy St., Providence 3, R. I.
Garlock Packing Co., Palmyra, N. Y.
Garod Radio Corp., 79 Washington St., Brooklyn 1, N. Y.
Gas & Oil Industry Labs., Inc., 2 Paine Ave., Irvington, N. J.
Gast Mfg. Corp., 137 Hinkley St., Benton Harbor, Mich.
Gaston Power Tools, Inc., 14829 Loomis St., Harvey, Ill.
Gates & Co., Inc., George W., Hempstead Turnpike & Lucille Ave., Franklin Square, N. Y.
Geigh Industrial Chemicals Div. of Geigh Chemical Corp., 89 Barclay St., New York 8, N. Y.
General Biochemicals Inc., Laboratory Park, Chagrin Falls, Ohio
General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.
General Ceramics & Steatite Corp., 250 Crows Mill Rd., Keasbey, N. J.
General Communication Co., 681 Beacon St., Boston 15, Mass.
General Control Company, 1200 Soldiers Field Rd., Boston 34, Mass.
General Controls Co., Glendale 1, Calif.
General Electric Co., 1133 E. 152nd St., Cleveland, Ohio
General Electric Co., Air Conditioning Div., 5 Lawrence St., Bloomfield, N. J.
General Electric Co., Apparatus Sales Div., 1 River Rd., Schenectady 5, N. Y.
General Electric Co., Atomic Power Equipment Component, 2900 Campbell Ave., Schenectady 6, N. Y.
General Electric Co., Chemical Div., 1 Plastics Ave., Pittsfield, Mass.
General Electric Co., Lamp Division, Nela Park, Cleveland 12, Ohio

NUCLEAR AND ALLIED PRODUCTS

General Electric Co., Tube Dept., Schenectady 5, N. Y.
General Electronic Labs., Inc., 18 Tremont St., Boston 8, Mass.
General Magnetics, Inc., 135 Bloomfield Ave., Bloomfield, N. J.
General Mills, Inc., Chemical Div., Kensington Rd., Kankakee, Ill.
General Mills, Inc., Mechanical Div., 1620 Central Ave., N. E., Minneapolis, Minn.
General Precision Laboratory, Inc., Pleasantville, N. Y.
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
Genisco, Inc., 2233 Federal Ave., Los Angeles, Calif.
Georator Corp., Manassas, Va.
Gerber Scientific Instrument Co., 89 Spruce St., Hartford, Conn.
Germanium Products Corp., 26 Cornelison Ave., Jersey City 4, N. J.
Giannini & Co., G. M., Pasadena 1, Calif.
Gits Molding Corp., 4600 W. Huron St., Chicago 44, Ill.
Glas-Col Apparatus Co., Inc., 711 Hulman St., Terre Haute, Ind.
Glass Engineering Laboratories, Belmont, Calif.
Glenco Corp., Metuchen, N. J.
Glidden Co., 11001 Madison Ave., Cleveland 2, Ohio
Glyco Products Co., Inc., 26 Court St., Brooklyn 2, N. Y.
Gold Seal Mfg. Co., 1230 W. Kinzie St., Chicago 22, Ill.
Goldak Co., 1544 W. Glenoaks Blvd., Glendale 1, Calif.
Goodyear Aircraft Corp., 1210 Massillion Rd., Akron 15, Ohio
Goodyear Tire & Rubber Co., Akron, Ohio
Gorrell & Gorrell, Haworth, N. J.
Goslin Electric & Mfg. Co., 2921 W. Olive St., Burbank, Calif.
Gothard Mfg. Co., 2110 Clear Lake Ave., Springfield, Ill.
Graflex, Inc., 154 Clarissa St., Rochester 8, N. Y.
Gramer-Halldorson Transformer Corp., 2734 N. Pulaski Rd., Chicago 39, Ill.
Grand Transformers, Inc., Grand Haven, Mich.
Graphite Metallizing Corp., 1043 Nepperhan Ave., Yonkers, N. Y.
Great Lakes Electric Mfg. Co., 17 S. Desplaines St., Chicago 6, Ill.
Green Instrument Co., 382 Putnam Ave., Cambridge, Mass.
Greer Hydraulics, Inc., International Airport, Jamaica 30, N. Y.
Greibach Instruments Corp., Durham Ave., Metuchen, N. J.
Greiner Co., Emil, 26 N. Moore St., New York 13, N. Y.
Grieve-Hendry Co., 1401–17 W. Carroll Ave., Chicago 7, Ill.
Guardian Electric Co., 1625 W. Walnut St., Chicago 12, Ill.
Gudeman Co., 340 W. Huron St., Chicago 10, Ill.
Gulton Mfg. Corp., 212 Durham Ave., Metuchen, N. J.
Gyromechanisms, Inc., Halesite, N. Y.

H. & H. Products Co., 766 Ramsey Ave., Hillside, N. J.
Hagan Corp., 323 Fourth Ave., Pittsburgh 22, Pa.
Hallett Mfg. Co., 1601 Florence Ave., Inglewood, Calif.
Hamilton Kent Mfg. Co., Kent, Ohio
Hamilton Mfg. Co., Two Rivers, Wis.
Hammarlund Mfg. Co., 460 W. 34th St., New York 1, N. Y.
Hammel-Dahl Co., 175 Post Rd., Providence 5, R. I.
Handy & Harman, 82 Fulton St., New York 38, N. Y.
Hannifin Corp., 501 S. Wolf Rd., Des Plaines, Ill.
Hanovia Chemical & Mfg. Co., 233 N. J. R. R. Ave., Newark 5, N. J.
Hanover Developments, 401 E. 74th St., New York 21, N. Y.
Hardwick, Hindle, Inc., 40 Hermon St., Newark 5, N. J.
Harris, Inc., 61 S. E. Yamhill, Portland, Ore.
Harshaw Chemical Co., 1945 E. 97th St., Cleveland 6, Ohio
Harty Co., Inc., R. V., 1433 Sioman Ave., Detroit 11, Mich.
Hastings Instrument Co., Superhighway at Pine Ave., Hampton, Va.
Hathaway Instrument Co., 1315 S. Clarkson St., Denver 10, Colo.
Haydon Mfg. Co., Inc., 2400 Elm St., Torrington, Conn.
Haydon Switch Co., 232 N. Elm St., Waterbury 20, Conn.
Haynes Stellite Co., A Div. of Union Carbide & Carbon Corp., 725 S. Lindsay St., Kokomo, Ind.
Hays Corp., Michigan City, Ind.
Heath Company, Benton Harbor, Mich.
Heinicke Instruments, 2035 Harding St., Hollywood, Fla.
Heinze Electric Co., 685 Lawrence St., Lowell, Mass.
Heise Bourdon Tube Co., Inc., Newtown, Conn.
Heldor Mfg. Corp., 238 Lewis Ave., Paterson, N. J.
Helipot Corp., Div. of Beckman Instruments, Inc., 916 Meridian Ave., South Pasadena, Calif.
Hellige, Inc., 877 Stewart Ave., Long Island City 1, N. Y.
Henry & Miller Industries, 45 Rockefeller Plaza, New York 20, N. Y.
Hermaseal Co., Inc., Riverside Drive, Elkhart, Ind.
Hermetic Seal Products Co., 29–37 S. 6th St., Newark 7, N. J.
Hevi Duty Electric Co., 4212 W. Highland Blvd., Milwaukee 1, Wis.
Hewlett-Packard Co., 395 Page Mill Rd., Palo Alto, Calif.
Hickok Electrical Instrument Co., 10514 Dupont Ave., Cleveland 8, Ohio
Hi-G, Inc., Bradley Field, Windsor Locks, Conn.
High Voltage Engineering Corp., 7 University Rd., Cambridge 38, Mass.
High Vacuum Equipment Corp., 349 Lincoln St., Hingham, Mass.
Highland Engineering Co., Westbury, N. Y.
Hill Co., C. R., 35 W. Grand River, Detroit 26, Mich.
Hill & Co., E. Vernon, P. O. Box 189, Lake Geneva, Wis.
Hirschman-Pohle Co., Inc., 115 Lent Ave., Le Roy, N. Y.
Hogan Laoratories, Inc., 155 Perry St., New York 14, N. Y.
Hoke, Inc., Englewood, N. J.
Hommel Co., O., 209–213 Fourth Ave., Pittsburgh, Pa.
Hoppe Engineering Co., 1 High St., Greensboro, Ind.
Horizons, Inc., 90 Nassau St., Princeton, N. J.
Horn Co., Inc., A. C., 10th St. & 44th Ave., Long Island City 1, N. Y.
Houghton Laboratories, Inc., 322 Bush St., Olean, N. Y.
Howard Industries, Inc., Divisions: Cyclohm Motor Corp., Electric Motor Corp., Racine, Wis.
Hudson Bay Division, Refrigeration Systems, Inc., 646 W. Washington Blvd., Chicago, Ill.
Hughes Aircraft Co., Culver City, Calif.
Huppert Co., K. H., 6830 S. Cottage Grove Ave., Chicago 37, Ill.
Huron Industries, P. O. Box 557, Port Huron, Mich.
Hycon Mfg. Co., 2961 E. Colorado St., Pasadena 8, Calif.
Hycor Co., Inc., 11423 Vanowen St., North Hollywood, Calif.

I-T-E Circuit Breaker Co., 19th & Hamilton Sts., Philadelphia 30, Pa.
Ilg Electric Ventilating Co., 2850 N. Crawford Ave., Chicago 41, Ill.
Illinois Water Treatment Co., 858 Cedar St., Rockford, Ill.
Imhof Ltd., Alfred, 112 New Oxford St., London, W. C. 1, England
Imperial Brass Mfg. Co., 1200 W. Harrison St., Chicago 7, Ill.
Imtra Corp., 58 Charles St., Cambridge 41, Mass.
Independent Filter Press Co., Inc., 230 48th St., Brooklyn, N. Y.
Indiana Steel Products Co., 700 Valparaiso St., Valparaiso, Ind.
Industrial Condenser Corp., 3243 N. California Ave., Chicago 18, Ill.
Industrial Control Co., Straight Path & Arlington Ave., Wyandanch, N. Y.
Industrial Controls, Inc., 525 N. Noble St., Chicago 22, Ill.
Industrial Devices, Inc., 22 State Rd., Edgewater, N. J.
Industrial Electronics, Inc., 8060 Wheeler St., Detroit 10, Mich.
Industrial Engineering & Equipment Co., 711 S. Theresa, St. Louis 3, Mo.
Industrial Instruments, Inc., 89 Commerce Rd., Cedar Grove, N. J.
Industrial Nucleonics Corp., 1205 Chesapeake Ave., Columbus 12, Ohio
Industrial Science, 63–15 Forest Ave., Ridgewood 27, N. Y.
Industrial Specialties Corp., 323 Atlantic Ave., Brooklyn 1, N. Y.
Industrial Test Equipment Co., 55 E. 11th St., New York 3, N. Y.
Industrial Timer Corp., 131 Ogden St., Newark 4, N. J.
Industrial Transformer Corp., Gouldsboro, Pa.
Industro, Inc., 649 Broadway, New York 12, N. Y.
Inet Div. of Leach Corp., 4441 Santa Fe Ave., Los Angeles 58, Calif.
Infilco, Inc., P. O. Box 5033, Tucson, Ariz.
Infra Electronic Corp., Roseland, N. J.
Ingersoll-Rand Co., 11 Broadway, New York 4, N. Y.
Instrument Development Labs., Inc., 163 Highland Ave., Needham Heights, Mass.
Instrument Motors, Acosta St., Stamford, Conn.
Instrument Resistors Co., 1036 Commerce Ave., Union, N. J.
Insulated Circuits, Inc., 115 Roosevelt Ave., Belleville, N. J.
Insuline Corp. of America, 186 Granite St., Manchester, N. H.
Interelectronics Corp., 2432 Grand Concourse, New York 58, N. Y.
International Engineering, Inc., 1200 Bolander Ave., Dayton, Ohio
International Equipment Co., 1284 Soldiers Field Rd., Boston 35, Mass.
International Instruments, Inc., P. O. Box 2954, New Haven 15, Conn.
International Nickel Co., Inc., 67 Wall St., New York 5, N. Y.
International Pump & Machine Works, 11–13 Governor St., Newark 2, N. J.
International Radiant Corp., 40 Matinecock Ave., Port Washington, N. Y.
International Rectifier Corp., 1521 E. Grand Ave., El Segundo, Calif.
International Register Co., 2620 W. Washington Blvd., Chicago 12, Ill.
International Research Associates, 2221 Warwick Ave., Santa Monica, Calif.
International Resistance Co., 401 N. Broad St., Philadelphia 8, Pa.
Iona Ventilator Co., Inc., 2829 W. Dauphin St., Philadelphia, Pa.
Irvington Varnish & Insulator, Div. of Minnesota Mining & Mfg. Co., 10 Argyle Terrace, Irvington, N. J.
Isolantite Mfg. Corp., Stirling, N. J.
Isotope Accessories Co., Box 5458, Philadelphia 43, Pa.
Isotope Products Ltd., Davis Rd., Oakville, Ontario, Canada
Isotope Specialties Co., 3816 San Fernando Rd., Glendale, Calif.

J-B-T Instruments, Inc., 441 Chapel St., New Haven 8, Conn.
Jacobs Instrument Co., 4718 Bethesda Ave., Bethesda, Md.
James Vibrapowr Co., 4036 N. Rockwell St., Chicago 18, Ill.
Jarrell-Ash Co., 26 Farwell St., Newtonville, Mass.
Jasonals Chemical Corp., 825 E. 42nd St., Brooklyn 10, N. Y.
Javex, P. O. Box 646, Redlands, Calif.
Jeffers Electronics Div., Speer Carbon Co., DuBois, Pa.
Jennings Radio Mfg. Corp., 970 McLaughlin Ave., San Jose 12, Calif.
Jobbins Electronic Enterprises, Menlo Park, Calif.
Johns-Manville, 22 E. 40th St., New York, N. Y.
Johnson Co., E. F., Waseca, Minn.
Johnson Corp., 809 Wood St., Three Rivers, Mich.
Johnson Service Co., 507 E. Michigan St., Milwaukee 2, Wis.
Johnson-Williams, Ltd., 2625 Park Blvd., Palo Alto, Calif.
Jordan & Co., Inc., E. South & New Jersey, Indianapolis, Ind.
Jordan Electronic Mfg. Co., Inc., Union Bldg., 119 E. Union St., Pasadena 1, Calif.
Jay Mfg. Co., Oliver Bldg., Pittsburgh 22, Pa.

K-F Development Co., 2606 Spring St., Redwood City, Calif.
K-M Laboratories, 550 Beverly Rd., Teaneck, N. J.
K-V Transformer Co., 20 E. Franklin St., Danbury, Conn.
Kahl Scientific Instrument Corp., P. O. Box 1166, El Cajon, Calif.
Kahle Engineering Co., 1307 Seventh St., North Bergen, N. J.
Kahlenberg Bros. Co., 12th & Monroe Sts., Two Rivers, Wis.
Kahn & Co., Inc., 541 Windsor St., Hartford, Conn.
Karp Metal Products Co., Div. of H & B American Machine Co., 211 63rd St., Brooklyn 20, N. Y.
Kay Electric Co., 25 Maple Ave., Pine Brook, N. J.
Kay-Lab, Inc., 1090 Morena Blvd., San Diego 10, Calif.
Kearfott Co., Inc., 14844 Oxnard St., Van Nuys, Calif.
Keckley Co., O., 400 W. Madison St., Chicago 6, Ill.
Keithley Instruments, 3868 Carnegie Ave., Cleveland, Ohio
Keleket Instrument Division, 266–8 W. Fourth St., Covington, Ky.
Keller Products, Inc., Manchester, N. H.
Kellogg Co., M. W., Chemical Mfg. Div., P. O. Box 469, Jersey City 3, N. J.
Kellogg Switchboard & Supply Co., 79 W. Monroe, Chicago 3, Ill.
Ken Research, Inc., 831 Fifth Ave., River Edge, N. J.
Kent Co., F. C., 64 Howard St., Irvington, N. J.
Kenyon Transformer Co., Inc., 840 Barry St., New York 59, N. Y.
Kepco Labs., 131–38 Sanford Ave., Flushing, N. Y.
Kessler Chemical Co., Inc., State Rd. & Cottman Ave., Philadelphia 35, Pa.
Ketay Instrument Corp., 555 Broadway, New York 12, N. Y.
Kewaunee Mfg. Co., 5083 E. Center St., Adrian, Mich.

Keystone Bolt & Nut Corp., 127 Church St., New York 7, N. Y.
Keystone Carbon Co., Inc., Saint Marys, Pa.
Keystone Compressor Co., 8417 Hagerman St., Philadelphia 36, Pa.
Keystone Electronics Co., 114 Manhattan St., Stamford, Conn.
Keystone Electronics Corp., 423 Broome St., New York 13, N. Y.
Keystone Products Co., 904-6 23rd St., Union City, N. J.
Kidde Nuclear Laboratories, Inc., Walter, 975 Stewart Ave., Garden City, N. Y.
Kieley & Mueller Co., Inc., Genung St., Middletown, N. Y.
Kings Electronics Co., 40 Marbledale Rd., Tuckahoe, N. Y.
Kingston-Conley Div., The Hoover Co., North Plainfield, N. J.
Kinney Mfg. Div., The New York Air Brake Co., 3529 Washington St., Boston, Mass.
Kirchberger & Co., Inc., M., 82-92 W. Forest Ave., Englewood, N. J.
Knapp Mills Inc., 23-15 Borden Ave., Long Island City 1, N. Y.
Knight, Maurice A., 171 Kelly Ave., Akron, Ohio
Kollmorgen Optical Corp., 347 King St., Northampton, Mass.
Kollsman Instrument Corp., 80-08 45th Ave., Elmhurst, N. Y.
Kontes Glass Co., Spruce St., Vineland, N. J.
Kraftile Co., Niles, Calif.
Krohn-Hite Instrument Co., 580 Massachusetts Ave., Cambridge 39, Mass.
Kruger Instruments, Harold, Box 164, San Gabriel, Calif.
Kuljian Corporation, The, 1200 N. Broad St., Philadelphia 21, Pa.
Kupfrian Mfg. Corp., 395 State St., Binghamton, N. Y.
Kybernetes Co., 1100 Raymond Blvd., Newark, N. J.

L & O Research & Development Corp., 134 N. Wayne Ave., Wayne, Pa.
Labline, Inc., 217 N. Desplaines St., Chicago 6, Ill.
Laboratory Equipment Corp., St. Joseph, Mich.
Laboratory for Electronics, Inc., 75 Pitts St., Boston 14, Mass.
Laboratory Furniture Co., Inc., P. O. Box 590, Mineola, N. Y.
Labscope, Inc., 728 Garden St., Carlstadt, N. J.
Lambda Electronics Corp., 103-02 Northern Blvd., Corona 68, N. Y.
Lamotte Chemical Products Co., Towson 4, Md.
Lancaster Lens Co., Lancaster, Ohio
Landauer, Jr., Co., R. S., P. O. Box 102, Park Forest, Ill.
Langevin Mfg. Corp., 37 W. 65th St., New York 23, N. Y.
Landis & Gyr, Inc., 45 W. 45th St., New York 36, N. Y.
Landsverk Electrometer Co., 550-552 W. Garfield Ave., Glendale 4, Calif.
Lapp Insulator Co., Inc., 31 Gilbert St., LeRoy, N. Y.
La Roe Instruments, Inc., Box 5906, Bethesda 14, Md.
Larson Instrument Co., 24 Orchard St., Tarrytown, N. Y.
Lavoie Laboratories, Morganville, N. J.
Lawn Electronics Co., E. Freehold Rd., Freehold, N. J.
Leader Iron Works, Inc., 2110 N. Jasper, Decatur, Ill.
Lectrohm, Inc., 5561 Northwest Highway, Chicago 30, Ill.
Lee Electronic Labs., Inc., 233 Dudley St., Roxbury 19, Mass.
Lee Laboratories, Inc., Genesee, Pa.
Leeds & Northrup Co., 4970 Stenton Ave., Philadelphia 44, Pa.
Leighton Labs., H. W., 26 Herman St., Glen Ridge, N. J.
Leitz, Inc., E. 468 Fourth Ave., New York, N. Y.
Lektra Laboratories, 154 Eleventh Ave., New York 11, N. Y.
Leland Electric Co., Div. of American Machine & Foundry Co., 1501 Webster St., Dayton 1, Ohio
Leland Instruments, Ltd., 22-23 Millbank, Westminster, S. W. 1., London, England
Lenkurt Electric Co., 1113 County Rd., San Carlos, Calif.
Lennard Co., Inc., P. M., 671 Bergen St., Brooklyn 38, N. Y.
Leonard Electric Products Co., Inc., 67 34th St., Brooklyn 32, N. Y.
Lermac, Inc., 5303 Adeline St., Oakland, Calif.
Lesa, Via Bergamo 21, Milan, Italy
Leslie Co., 229 Grant Ave., Lyndhurst, N. J.
Levinthal Electronic Products, 2821 Fair Oaks Ave., Redwood City, Calif.
Lewis & Kaufman Ltd., 17320 El Rancho Ave., P. O. Box 337, Los Gatos, Calif.
Librascope, Inc., 808 Western Ave., Glendale, Calif.
Liebel-Flarsheim Co., 111 E. Amity Rd., Cincinnati 15, Ohio
Lindberg Engineering Co., 2450 W. Hubbard St., Chicago 12, Ill.
Linde Air Products Co., A Div. of Union Carbide & Carbon Corp., 30 E. 42nd St., New York 17, N. Y.
Lindgren & Associates, Erik A., 4515 N. Ravenswood Ave., Chicago 40, Ill.
Linear Equipment Labs., Inc., Brightwater Place, Massapequa, N. Y.
Linick Chemical Co., 59 E. Madison St., Chicago 3, Ill.
Link Aviation, Inc., Binghamton, N. Y.
Liston-Becker Instrument Co., Inc., 649 Hope St., Springdale, Conn.
Little, Inc., Arthur D., Acorn Lane, Cambridge 42, Mass.
Litton Engineering Laboratories, 1049 Brittan Ave., San Carlos, Calif.
Locke Dept., General Electric Co., P. O. Box 57, Baltimore 3, Md.
Louthan Mfg. Co., East Liverpool, Ohio
Lumenite Electric Co., 407 S. Dearborn St., Chicago 5, Ill.
Luzerne Rubber Co., Muirhead Ave., Trenton, N. J.
Lydon Bros., Inc., 85 Zabriskie St., Hackensack, N. J.
Lyon Metal Products, Inc., 10 Montgomery St., Aurora, Ill.

McCormick-Selph Associates Box-6, Hollister, Calif.
McIntosh Lab., Inc., 320 Water St., Binghamton, N. Y.
McMillan Industrial Corp., Brownville Industrial Plant, Ipswich, Mass.
McShan Development Corp., 71 Murray St., New York 3, N. Y.
Maas & Waldstein Co., 2121 McCarter Highway, Newark 4, N. J.
Macbeth Corp., P. O. Box 950, Newburgh, N. Y.
Macdonald Co., Inc., W. S., 33 University Rd., Cambridge 38, Mass.
Machlett Laboratories, Inc., 1063 Hope St., Springdale, Conn.
MacLeod & Hanopol, Inc., 10 Roland St., Charlestown 29, Mass.
Magnaflux Corp., 7300 W. Lawrence Ave., Chicago 31, Ill.
Magnatran, Inc., 246 Schuyler Ave., Kearny, N. J.
Magnavox Co., Components Div., Fort Wayne 4, Ind.
Magnetic Amplifiers, Inc., 632 Tinton Ave., New York 55, N. Y.
Magnetic Research Corp., 200 E. Center St., El Segundo, Calif.
Magnetics, Inc., Box 230-A, Butler, Pa.
Magnetics Research Co., 142 King St., Chappaqua, N. Y.
Makepeace Co., D. E., Attleboro, Mass.
Mallinckrodt Chemical Works, Second & Mallinckrodt Sts., St. Louis 7, Mo.
Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Manson Laboratories, 207 Greenwich Ave., Stamford, Conn.
Manufacturers Engineering & Equipment Corp., York & Mill Rds., Hatboro, Pa.
Marconi Instruments Ltd., 23 Beaver St., New York 4, N. Y.
Marion Electrical Instrument Co., 402 Canal St., Manchester, N. H.
Markel & Sons, L. Frank, School House Lane, Norristown, Pa.
Matawan Electronics Co., Inc., 236 Creek Rd., Keansburg, N. J.
Mathieson Chemical Corp., Olin Industrial Chemicals Div., Baltimore 3, Md.
Matthew Laboratories, 345 Nepperhan Ave., Yonkers 2, N. Y.
Maurer, Inc., J. A., 37-01 31st St., Long Island City, N. Y.
Maxson Corp., W. L., 460 W. 34th St., New York 1, N. Y.
Maxwell Rubber Products Corp., Industrial St., W., Clifton, N. J.
Measurement Engineering Ltd., Arnprior, Ontario, Canada
Measurements Corp., Boonton, N. J.
Meditronic Instruments, 4867 Fountain Ave., Hollywood 29, Calif.
Mellaphone Corp., Rochester 2, N. Y.
Menlo Research Laboratory, Menlo Park, Calif.
Mepco Inc., 35-37 Abbett Ave., Morristown, N. J.
Merck & Co., Inc., Rahway, N. J.
Mercoid Corp., 4201 Belmont Ave., Chicago 41, Ill.
Mercury Electronic Co., Box 450, Red Bank, N. J.
Merritt & Zaleski, Inc., 33-66 12th St., Long Island City 6, N. Y.
Metal Hydrides, Inc., 12-24 Congress St., Beverly Mass.
Metal Products Corp., 48 W. 19th St., Weehawken, N. J.
Metal Textile Corp., 647 E. First Ave., Roselle, N. J.
Metalab Equipment Corp., 270 Duffy Ave., Hicksville, N. Y.
Metallo Chemical Corp., 117 Liberty St., New York 6, N. Y.
Metals & Controls Corp., General Plate Div., Spencer Thermostat Div., Attleboro, Mass.
Meters, Inc., 5353 N. Keystone Ave., Indianapolis 20, Ind.
Methode Manufacturing Corp., 2021 W. Churchill St., Chicago 47, Ill.
Metropolitan Electronics & Instruments Co., 106 Fifth Ave., New York 11, N. Y.
Metz Refining Co., 369 Mulberry St., Newark 2, N. J.
Michel Mfg. Co., 227 N. Water St., Milwaukee 2, Wis.
Michigan Chemical Corp., St. Louis, Mo.
Mico Instrument Co., 82 S. Trowbridge St., Cambridge 38, Mass.
Micro-Circuits Co., New Buffalo, Mich.
Mid-Century Instrumatic Corp., 611 Broadway, New York 12, N. Y.
Midwestern Geophysical Lab., 3400 S. Harvard, Tulsa, Okla.
Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.
Miller Instruments, Inc., William, 325 N. Halstead Ave., Pasadena 8, Calif.
Miller & Son, Inc., Franklin P., 36 Meadow St., East Orange, N. J.
Millivac Instruments, 444 Second St., Schenectady, N. Y.
Milwaukee Glass Works, Inc., 2338 N. 30th St., Milwaukee, Wis.
Milwaukee Transformer Co., 5231 N. Hopkins St., Milwaukee 9, Wis.
Mine Safety Appliances Co., Braddock, Thomas & Meade Sts., Pittsburgh 8, Pa.
Miniature Precision Bearings, Inc., Keene, N. H.
Minimax Co., 5905 N. Clark St., Chicago 26, Ill.
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., S., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Wayne & Windrim Aves., Philadelphia 44, Pa.
Minnesota Electronics Corp., 1058 University Ave., St. Paul 4, Minn.
Minor Rubber Co., 49 Ackerman St., Bloomfield, N. J.
Mission-Western Engineers, Inc., 132 W. Colorado, Pasadena 1, Calif.
Mitchell Rand Insulation Co., Inc., 51 Murray St., New York 7, N. Y.
Mitronics, Inc., 232 Thirteenth Ave., Newark N. J.
Mixing Equipment Co., Inc., 192 Mt. Read Blvd., Rochester 11, N. Y.
Model Rectifier Corp., 557 Rogers Ave., Brooklyn 25, N. Y.
Moeller Instrument Co., 132nd St. at 89th Ave., Richmond Hill 18, N. Y.
Molded Latex Products, Inc., 27 Kentucky Ave., Paterson 3, N. J.
Moloney Electric Co., 5390 Bircher Blvd., St. Louis 20, Mo.
Monsanto Chemical Co., 1700 S. Second St., St., Louis, Mo.
Motoresearch Co., 1600 Junction Ave., Racine, Wis.
Motorola, Inc., Communications & Electronics Div., 4545 W. Augusta Blvd., Chicago 51, Ill.
Moulic Specialties Co., 1005 W. Washington St., Bloomington, Ill.
Mt. Vernon Precision Transformer Co., 201 S. Third Ave., Mt. Vernon, N. Y.
Muirhead & Co., Ltd., Beckenham, Kent, England
Murphy & Miller, Inc., 1322 S. Michigan Ave., Chicago 5, Ill.
Murray Plastics Co., 26 Cottage St., Poughkeepsie, N. Y.
Mycalex Corp. of America, Clifton Blvd., Clifton, N. J.

NRD Instrument Co., 6427 Etzel Ave., St. Louis 14, Mo.
Naer Corp., 2301 S. Purdue Ave., West Los Angeles, Calif.
Narda Corp., The, 66 Main St., Mineola, N. Y.
National Carbon Co., A Div., of Union Carbide & Carbon Corp., 30 E. 42nd St., New York 17, N. Y.
National Cash Register Co., Electronics Div., 3348 W. El Segundo Blvd., Hawthorne, Calif.
National Cine Equipment Co., Inc., 209 W. 48th St., New York, N. Y.
National Intercommunicating Systems, Inc., 1130 N. Milwaukee Ave., Chicago 22, Ill.
National Lead Co., 111 Broadway, New York 6, N. Y.
National Pneumatic Co., Inc., & Holtzer-Cabot Divisions, 125 Amory St., Boston 19, Mass.
National Radiac, Inc., 10 Crawford St., Newark 2, N. J.
National Research Corp., 160 Charlemont St., Newton Highlands, Mass.
National Spectrographic Labs., Inc., 6300 Euclid Ave., Cleveland 3, Ohio
National Vulcanized Fibre Co., Wilmington 99, Del.
Natvar Corp., 211 Randolph Ave., Woodbridge, N. J.
Neo Sil Products Div., Rubber Associates, Inc., 850 Metropolitan Ave., Brooklyn 11, N. Y.
Neptune Meter Co., 50 W. 50th St., New York 20, N. Y.
Neutronic Associates, 87-16 116th St., Richmond Hill, N. Y.
New Hermes Engraving Machine Corp., 13-19 University Place, New York 3, N. Y.
New London Instrument Co., P. O. Box 189, New London, Conn.
New York Transformer Co., Inc., Third Ave., Alpha, N. J.

NUCLEAR AND ALLIED PRODUCTS

Newark Wire Cloth Co., 351 Verona Ave., Newark 4, N. J.
Newcomb Audio Products Co., 6824 Lexington Ave., Hollywood 38, Calif.
Ney Co., J. M., 71 Elm St., Hartford 1, Conn.
Norrman Laboratories, Ernst, Williams Bay, Wis.
North American Aviation, Inc., Nuclear Engineering & Manufacturing, P. O. Box 309, Downey, Calif.
North American Philips Co., Inc., 750 S. Fulton Ave., Mt. Vernon, N. Y.
North American Research Labs., Inc., 725 Lexington Ave., Kenilworth, N. J.
North Hills Electric Co., Inc., 203-18 35th Ave., Bayside 61, N. Y.
Northeastern Engineering, Inc., Manchester, N. H.
Northern Electronic & Vacuum Industries, St. Sauveur des Monts, P. Q., P. O. Box 105M, Canada
Nuclear Development Associates, Inc., 80 Grand St., White Plains, N. Y.
Nuclear Development Laboratory, P. O. Box 7034, Kansas City, Mo.
Nuclear Instrument & Chemical Corp., 229 W. Erie St., Chicago 10, Ill.
Nuclear Research Associates, 2875 Broadway, New York 25, N. Y.
Nuclear Measurements Corp., 2460 N. Arlington Ave., Indianapolis 18, Ind.
Nuclear Research Corp., Southampton, Pa.
Nuclear Specialty Co., P. O. Box 455, Center Moriches, N. Y.
Nucleonic Co. of America, 196 DeGraw St., Brooklyn 31, N. Y.
Nukem Products Corp., 111 Colgate Ave., Buffalo 20, N. Y.
Nurnberg Thermometer Co., Inc., 124 Livingston St., Brooklyn 2, N. Y.

Offner Electronics, Inc., 5320 N. Kedzie Ave., Chicago 25, Ill.
Ohaus Scale Corp., 1050 Commerce Ave., Union, N. J.
Ohmart Corp., 2236 Bogen St., P. O. Box 67, Sta. B, Cincinnati 22, Ohio
Ohmite Mfg. Co., 3601 Howard St., Skokie, Ill.
Omega Machine Co., Div. of B-I-F Industries, Inc., 530 Harris Ave., Providence 1, R. I.
Opad-Green Co., 71 Warren St., New York, N. Y.
Optical Film Engineering Co., 2731 N. 6th St., Philadelphia 33, Pa.
Oregon Electronic Mfg. Co., 2232 E. Burnside St., Portland 15, Ore.
Ortho Filter Corp., 198 Albion Ave., Paterson 2, N. J.
Ossian Mfg. Co., Box 151A, Ossian, Ind.
Oster Mfg. Co., John, Avionic Div., 1 Main St., Racine, Wis.
Owens-Corning Fiberglas Corp., National Bank Bldg., Toledo, Ohio
Oxford Electric Corp., 3911 S. Michigan Ave., Chicago 15, Ill.

P C A Electronics, Inc., 2180 Colorado Ave., Santa Monica, Calif.
PSC Applied Research Ltd., 1500 O'Connor Drive, Toronto 16, Ontario, Canada
Pabst Engineering Equipment Co., Inc., 676 Pennsylvania Ave., Elizabeth, N. J.
Pace Electrical Instruments Co., Inc., 408 Manhattan Ave., Brooklyn 11, N. Y.
Pacific Division, Bendix Aviation Corp., 11600 Sherman Way, North Hollywood, Calif.
Pacific Pumps, Inc., Box 151, Huntington Park, Calif.
Pacific Transducer Corp., 11836 SW Pico Blvd., Los Angeles 64, Calif.
Packard Instrument Co., P. O. Box 428, La Grange, Ill.
Paisley Products, Inc., 630 W. 51st St., New York 19, N. Y.
Pancro Mirrors, Inc., 2958 Los Felix Blvd., Los Angeles 29, Calif.
Panta Instruments Ltd., 26, Savage Gardens, London, E.C.3, England
Pantatron Ltd., Metals Div., Market Bldgs., 29 Mincing Lane, London, E.C.3, England
Pantatron Ltd., Teleflex Works, High Rd., Chadwell Heath, Essex, England
Paraplegics Mfg. Co., Inc., 10068 Franklin Ave., Franklin Park, Ill.
Paragon Electric Co., Two Rivers, Wis.
Parr Instrument Co., Moline, Ill.
Partlow Corp., The, 2 Campion Rd., New Hartford, N. Y.
Passaic Analytical Labs., Inc., 228 Aycrigg Ave., Passaic, N. J.
Patterson-Kelley Co., Inc., East Stroudsburg, Pa.
Peck & Harvey Mfg. Corp., 5643 N. Western Ave., Chicago 45, Ill.
Pelton & Crane Co., 632 Harper Ave., Detroit, Mich.
Penberthy Instrument Co., Hi-D Division, 666 Adams St., Seattle 8, Wash.
Penfield Mfg. Co., Inc., Meriden, Conn.
Penn Fibre & Specialty Co., 2020 E. Westmoreland St., Philadelphia 34, Pa.
Pentron Corp., 221 E. Cullerton St., Chicago 16, Ill.
Perkin-Elmer Corp., Norwalk, Conn.
Perkin Engineering Corp., 345 Kansas St., El Segundo, Calif.
Permacel Tape Corp., New Brunswick, N. J.
Permag Corp., 214 Toaffe Place, Brooklyn 5, N. Y.
Permaflux Corp., 4900 W. Grand Ave., Chicago 39, Ill.
Permutit Co., 330 W. 42nd St., New York 36, N. Y.
Peschel Electronics, Inc., 13 Garden St., New Rochelle, N. Y.
Peterson & Co., Inc., Leonard, 1222 Fullerton Ave., Chicago 14, Ill.
Pfaudler Co., 1002 West Ave., Rochester, N. Y.
Phaostron Co., 151 Pasadena Ave., South Pasadena, Calif.
Phebco Inc., 3640 Woodland Ave., Baltimore 15, Md.
Phelps Dodge Copper Products Corp., 40 Wall St., New York 5, N. Y.
Philadelphia Quartz Co., 1146 Public Ledger Bldg., Philadelphia 6, Pa.
Philbrick Researches, Inc., George A., 230 Congress St., Boston 10, Mass.
Phillips Control Corp., 59 W. Washington St., Joliet, Ill.
Phillips-Drucker, 2245 S. Vanderventer Ave., St. Louis, Mo.
Phoenix Precision Instrument Co., 3803-05 N. 5th St., Philadelphia, Pa.
Photobell Co., 116 Nassau St., New York 7, N. Y.
Photocon Research Products 421 N. Foothill Blvd., Pasadena 7, Calif.
Photron Instrument Co., 6516 Detroit Ave., Cleveland 2, Ohio
Photoswitch Div., Electronic Corp. of America, 77 Broadway, Cambridge 42, Mass.
Picker X-Ray Corp., 25 South Broadway, White Plains, N. Y.
Pilot Chemicals Inc., 47 Felton St., Waltham 54, Mass.
Pittsburgh Lectrodryer Corp., P. O. Box 1766, Pittsburgh, Pa.
Plastic Capacitors, Inc., 2511 W. Moffat St., Chicago 47, Ill.
Plastics & Electronics Co., 272 Northland Ave., Buffalo 8, N. Y.
Plastilight Inc., Box 214, Stamford, Conn.
Polarad Electronics Corp., 100 Metropolitan Ave., Brooklyn 11, N. Y.
Polaroid Corp., Cambridge 39, Mass.
Polymer Corp. of Pennsylvania, Reading, Pa.
Polymer Industries, Inc., Springdale, Conn.
Polyphase Instrument Co., 705 Haverford Rd., Bryn Mawr, Pa.
Polytechnic Research & Development Co., Inc., 202 Tillary St., Brooklyn 1, N. Y.
Polytron Engineering, Inc., 32 W. Biddle St., Baltimore 1, Md.
Porcelain Products, Inc., 422 W. Sandusky St., Findlay, Ohio
Potter & Brumfield Mfg. Co., Princeton, Ind.
Potter Instrument Co., 115 Cutter Mill Rd., Great Neck, N. Y.
Power Designs, Inc., 119-22 Atlantic Ave., Richmond Hill 19, N. Y.
Power Transformer Co., Inc., 532 Mulberry St., Newark 5, N. J.
Powers Regulator Co., The, 3400 Oakton, Skokie, Ill.
Pratt & Whitney Div., Niles-Bement-Pond Co., West Hartford 1, Conn.
Precise Development Corp., 2 Neil Court, Oceanside, N. Y.
Precise Measurements Co., 942 Kings Highway, Brooklyn 23, N. Y.
Precision Apparatus Co., Inc., 92-27 Horace Harding Blvd., Elmhurst, N. Y.
Precision Electronics, Inc., 9101 King Ave., Franklin Park, Ill.
Precision Inc., 730 Lyndale Ave., N., Minneapolis, Minn.
Precision Radiation Instruments, Inc., 2235 S. La Brea Ave., Los Angeles 16, Calif.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Precision Tube Co., Inc., North Wales, Pa.
Press Wireless Laboratories, Inc., 25 Prospect Place, West Newton 65, Mass.
Price Electric Corp., Frederick, Md.
Printloid Inc., 93 Mercer St., New York 12, N. Y.
Process & Instruments, 15 Stone Ave., Brooklyn 33, N. Y.
Production Instrument Co., 710 W. Jackson Blvd., Chicago 6, Ill.
Professional Instrument Corp., 149 Broadway, New York 6, N. Y.
Proportioneers, Inc., Div. of B-I-F Industries, Inc., 530 Harris Ave., Providence 1, R. I.
Prufcoat Laboratories, Inc., 63 Main St., Cambridge, Mass.
Pulverizing Machinery Co., 43 Chatham Rd., Summit, N. J.
Pyramid Electric Co., 1445 Hudson Blvd., North Bergen, N. J.
Pyramid Instrument Corp., 630 Merrick Rd., Lynbrook, N. Y.
Pyro-Metals, Inc., Hudson, Mass.
Pyrometer Instrument Co., Inc., Bergenfield, N. J.

Q.V.S., Inc., 20 N. 15th St., East Orange, N. J.

R-C Scientific Instrument Co., 307 Culver Blvd., Playa Del Rey, Calif.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
Radiation Instrument Co., P. O. Box 733, Silver Spring, Md.
Radiation Instrument Development Lab., 2337 W. 67th St., Chicago 36, Ill.
Radio City Products Co., Inc., Centre & Glendale Sts., Easton, Pa.
Radio Corporation of America, Engineering Products Div., Camden, N. J.
Radio Corporation of America, Tube Div., Harrison, N. J.
Radio Frequency Labs., Inc., Boonton 2, N. J.
Radio Receptor Co., Inc., 251 W. 19th St., New York 11, N. Y.
Radio Sonic Corp., 32 W. 22nd St., New York 10, N. Y.
Radioactive Products, Inc., 540 W. Congress St., Detroit 26, Mich.
Radium Chemical Co., 161 E. 42nd St., New York 17, N. Y.
Rapid Electric Co., 2881 Middletown Rd., New York, N. Y.
Rascher & Betzold, Inc., 730 N. Franklin St., Chicago 10, Ill.
Rauland-Borg Corp., 3515 W. Addison St., Chicago 18, Ill.
Rawson Electrical Instrument Co., 114 Potter St., Cambridge 42, Mass.
Ray-O-Vac Co., Madison, Wis.
Ray-Proof Corp., 513 W. 54th St., New York, N. Y.
Raypar Inc., 7800 W. Addison St., Chicago, Ill.
Raytheon Mfg. Co., Equipment Operations, Waltham 54, Mass.
Raytheon Mfg. Co., Microwave & Power Tube Operations, Waltham 54, Mass.
Raytheon Mfg. Co., Receiving Tube Div., 55 Chapel St., Newton 58, Mass.
Raytor Corp., Fifth St. & Cannon Ave., Lansdale, Pa.
Red Bank Division, Bendix Aviation Corp., Eatontown, N. J.
Redman Electronics Corp., P. O. Box 72, Thompsonville, Conn.
Redmond Co., Inc., Owosso, Mich.
Reeves Instrument Corp., 215 E. 91st St., New York 28, N. Y.
Regulator Equipment Corp., 56 California Ave., Paterson 3, N. J.
Reichhold Chemicals, Inc., 525 N. Broadway, White Plains, N. Y.
Reilly Tar & Chemical Corp., 1615 Merchants Bank Bldg., 11 S. Meridan St., Indianapolis, Ind.
Reliance Instrument Co., 3027 W. Van Buren St., Chicago 12, Ill.
Reliance Paint Co., Corrosite Div., 64 S. 6th St., Brooklyn 11, N. Y.
Remington Air Conditioning Div., Willey St., Auburn, N. Y.
Remington Rand Inc., Engineering Research Associates Div., 1902 W. Minnehaha Ave., St. Paul W4, Minn.
Reon Resistor Corp., 117 Stanley Ave., Yonkers, N. Y.
Republic Flow Meters Co., 2240 Diversey Parkway, Chicago 47, Ill.
Republic Rubber Div., Lee Rubber & Tire Corp., Youngstown, Ohio
Resdel Engineering Corp., 2351 Riverside Drive, Los Angeles 39, Calif.
Research Development Manufacture, 429 E. Collom St., Philadelphia 44, Pa.
Research Electronics Laboratory, Roslyn, Pa.
Resistance Products Co., 914 S. 13th St., Harrisburg, Pa.
Revere Copper & Brass, Inc., 230 Park Ave., New York 17, N. Y.
Reynolds Metals Co., 2500 S. Third St., Louisville 1, Ky.
Rex Corp., The, Hayward Rd., West Acton, Mass.
Richards Co., Inc., Arklay S., 12 Winchester St., Newton Highlands 61, Mass.
Roanwell Corp., 662 Pacific St., Brooklyn 17, N. Y.
Robbins & Myers, Inc., 1345 Lagonda Ave., Springfield, Ohio
Rockbar Corp., 215 E. 37th St., New York 16, N. Y.
Rockwell Co., W. S., 200 Eliot St., Fairfield, Conn.
Roller-Smith Corp., 1825 W. Market, Bethlehem, Pa.
Rollin Co., 2010 Lincoln Ave., Pasadena 3, Calif.
Rosen Engineering Products, Inc., Raymond, 32nd & Walnut Sts., Philadelphia 4, Pa.
Rosenberg Associates, Paul, 100 Stevens St., Mt. Vernon, N. Y.
Rotron Mfg. Co., 7 Schoonmaker Lane, Woodstock, N. Y.
Roy Co., Milton, 1300 E. Mermaid Lane, Philadelphia 8, Pa.
Rubber & Plastics Compound Co., Inc., 30 Rockefeller Plaza, New York 20, N. Y.
Rubicon Co., Ridge Ave. at 35th St., Philadelphia 32, Pa.
Rutherford Electronics Corp., 3707 S. Robertson Blvd., Culver City, Calif.

St. John X-Ray Laboratory, Califon, N. J.
Samples Machine Co., A. M., 506 N. Central Ave., Knoxville, Tenn.
Sanborn Co., 39 Osborn St., Cambridge, Mass.

Sanders Associates, Inc., Nashua, N. H.
Sanford Miller Co., 691 Bedford Ave., Brooklyn 6, N. Y.
Sangamo Electric Co., Springfield, Ill.
Sargent & Co., E. H., 4647 W. Foster Ave., Chicago 30, Ill.
Sarkes Tarzian, Inc., 415 N. College Ave., Bloomington, Ind.
Sauereisen Cements Co., Sauereisen Bldg., Pittsburgh 15, Pa.
Saxonburg Ceramics, Saxonburg, Pa.
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
Scientific Electric, 107–119 Monroe St., Garfield, N. J.
Scientific Electronic Labs., Inc., 866 Bergen St., Newark 8, N. J.
Scientific Glass Apparatus Co., Inc., 100 Lakewood Terrace, Bloomfield, N. J.
Scientific Specialties Corp., Snow & Union Sts., Brighton 35, Mass.
Scientific Wood Cabinet Co., 90 Holmes St., Belleville 9, N. J.
Scintilla Division, Bendix Aviation Corp., Sidney, N. Y.
Scott, Inc., Hermon Hosmer, 385 Putnam Ave., Cambridge, Mass.
Sealtron Corp., Reading Rd. at Amity, Cincinnati 15, Ohio
Sensitive Research Instrument Corp., 9 Elm Ave., Mt. Vernon, N. Y.
Serdex, Inc., 91 Cambridge St., Boston, Mass.
Servo Corp. of America, 2020 Jericho Turnpike, New Hyde Park, N. Y.
Servomechanisms, Inc., 500 Franklin Ave., Garden City, N. Y.
Servospeed Div., Electro Devices, Inc., 4 Godwin Ave., Paterson 1, N. J.
Servo-Tek Products Corp., 1086 Goffle Rd., Hawthorne, N. J.
Sessions Clock Co., Industrial Products Div., Forestville, Conn.
Sethco Mfg. Co., 70-78 Willoughby St., Brooklyn 1, N. Y.
Shallcross Mfg. Co., 10 Jackson Ave., Collingdale, Pa.
Shamban & Co., W. S., 11617 W. Jefferson Blvd., Culver City, Calif.
Sharples Corp., 2300 Westmoreland St., Philadelphia 40, Pa.
Shell Chemical Corp., 500 Fifth Ave., New York 36, N. Y.
Shell Oil Co., 50 W. 50th St., New York, N. Y.
Sherer-Gillett Co., Marshall, Mich.
Sherron Electronics Co., 1201 Flushing Ave., Brooklyn 6, N. Y.
Sherwin Instrument Co., 2875 Broadway, New York 25, N. Y.
Shieldalloy Corp., Div. of Metallurg, Inc., 99 Park Ave., New York 16, N. Y.
Shielding, Inc., Riverside, N. J.
Shriver & Co., Inc., 808 Hamilton St., Harrison, N. J.
Shurite Meters, 35 Hamilton St., New Haven 8, Conn.
Sickles Div., F. W., General Instrument Corp., 165 Front St., Chicopee, Mass.
Sierra Electronic Corp., 1050 Brittan Ave., San Carlos, Calif.
Sigma Instruments, Inc., 180 Pearl St., South Braintree, Boston 85, Mass.
Sigmamotor, Inc., 500 N. Main St., Middleport, N. Y.
Signal Engineering & Mfg. Co., 273 Branchport Ave., Long Branch, N. J.
Simmonds Aerocessories Inc., 105 White Plains Rd., Tarrytown, N. Y.
Simplex Valve & Meter Co., 68th & Upland Sts., Philadelphia 42, Pa.
Simpson Electric Co., Div. of American Gage & Machine Co., 5208 W. Kinzie St., Chicago 44, Ill.
Skinner Electric Valve Div., The Skinner Chuck Co., Edgewood Ave., New Britain, Conn.
Small Motors, Inc., 2076 Elston Ave., Chicago 14, Ill.
Sobotka Co., Eric, 104 W. 42nd St., New York, N. Y.
Sola Electric Co., 4633 W. 16th St., Chicago 50, Ill.
Solar Aircraft Co., 2200 Pacific Highway, San Diego 12, Calif.
Sommer & Maca Glass Machine Co., 3600 S. Oakley Ave., Chicago 9, Ill.
Sorensen & Co., Inc., 375 Fairfield Ave., Stamford, Conn.
Sorgel Electric Co., 838 National Ave., Milwaukee 4, Wis.
Sorvall, Inc., Ivan, P. O. Box 230 Pearl St., Norwalk, Conn.
Southern Lead Burning Co., Atlanta, Ga.
Sound Apparatus Co., Stirling, N. J.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Spaulding Fibre Co., Inc., 310 Wheeler St., Tonawanda, N. Y.
Special Glass Products Co., 10 W. 33rd St., New York 1, N. Y.
Special Instruments Laboratory, Inc., 1003 Highland Ave., Knoxville, Tenn.
Special Screw Products Co., Bedford, Ohio
Specialties, Inc., Skunks Misery Rd., Syosset, N. Y.
Specialized Instruments Corp., Belmont, Calif.
Specialty Battery Co., Madison 4, Wis.
Specialty Engineering Div. of Specialty Assembling & Packing Co., 79 Clifton Place, Brooklyn 38, N. Y.
Specialty Glass Co., 536 Lake Shore Drive, Chicago 11, Ill.
Speer Carbon Co., St. Marys, Pa.
Spellman Television Co., Inc., 3029 Webster Ave., Bronx 67, N. Y.
Spencer-Kennedy Labs., Inc., 186 Massachusetts Ave., Cambridge 39, Mass.
Sperry Gyroscope Co., Great Neck, N. Y.
Sphere Co., Inc., The, P. O. Box 557, Short Hills, N. J.
Sprague Electric Co., North Adams, Mass.
Square Root Mfg. Corp., 391 Saw Mill River Rd., Yonkers, N. Y.
Stackpole Carbon Co., St. Marys, Pa.
Standard Cabinet Co., 52 Washington Ave., Carlstadt, N. J.
Standard Electric Time Co., 89 Logan St., Springfield, Mass.
Standard Electronics Research Corp., 2 East End Ave., New York 21, N. Y.
Standard Winding Corp., 44-62 Johnes St., Newburgh, N. Y.
Star Porcelain Co., 61 Muirhead Ave., Trenton 9, N. J.
Star Stainless Screw Co., 226 Union Blvd., Paterson 2, N. J.
Statham Laboratories, Inc., 12401 W. Olympic Blvd., Los Angeles 64, Calif.
Steiner-Ives Co., Springfield Rd., Union, N. J.
Stephens Mfg. Corp., 8538 Warner Drive, Culver City, Calif.
Sterling Engineering Co., Inc., 54 Mill St., Laconia, N. H.
Sterling Mfg. Co., 7201 Wentworth, Cleveland, Ohio
Sterling Transformer Corp., 297 N. Seventh St., Brooklyn 11, N. Y.
Stevens Mfg. Co., Inc., 69 S. Walnut St., Mansfield, Ohio
Steward Mfg. Co., D. M., E. 36th St., Chattanooga 1, Tenn.
Stewart Engineering Co., P. O. Box 277, Soquel, Calif.
Stewart Mfg. Corp., F. W., 4311 Ravenswood Ave., Chicago 13, Ill.
Sticht Co., Inc., Herman H., 27 Park Place, New York 7, N. Y.
Stillman Rubber Co., 5811 Marilyn Ave., Culver City, Calif.
Stokes Machine Co., F. J., 5500 Tabor Rd., Philadelphia 20, Pa.
Streeter-Amet Co., 4101 Ravenswood Ave., Chicago 13, Ill.
Struthers-Dunn, Inc., Lamb's Rd., Pitman, N. J.
Struthers-Wells Corp., Warren, Pa.
Stupakoff Ceramic & Mfg. Co., Latrobe, Pa.
Sunshine Scientific Instrument, 180–12 Grant Ave., Philadelphia 15, Pa.
Superior Electric Co., 83 Laurel St., Bristol, Conn.
Superior Tube Co., Norristown, Pa.
Supreme, Inc., Box MH552, Greenwood, Miss.
Swartwout Co., 18547 Euclid Ave., Cleveland, Ohio
Sylvania Electric Products, Inc., 1740 Broadway, New York 19, N. Y.
Syncor Products Co., Malden, Mass.
Synthane Corp., River Road, Oaks, Pa.
Syntron Corp., 355 Lexington, Homer City, Pa.

T. L. G. Electric Corp., 31 W. 27th St., New York 1, N. Y.
Taller & Cooper Inc., 75 Front St., Brooklyn, N. Y.
Taylor Instrument Companies, 95 Ames St., Rochester, N. Y.
Tech Laboratories, Inc., Bergen & Edsall Blvds., Palisades Park, N. J.
Technical Associates, 140 W. Providencia Ave., Burbank, Calif.
Technical Measurement Corp., 140–142 State St., New Haven, Conn.
Technical Operations, Inc., 6 Schouler Court, Arlington 74, Mass.
Technical Ply-Woods, 226 N. La Salle St., Chicago, Ill.
Technical Service Corp., 1404 W. Market St., Louisville 3, Ky.
Technitrol Engineering Corp., 2751 N. 4th St., Philadelphia 33, Pa.
Technology Instrument Co., 531 Main St., Acton, Mass.
Techron Co., 254–256 Friend St., Boston 14, Mass.
Tektronix, Inc., P. O. Box 831, Portland 7, Ore.
Telechrome, Inc., 88 Merrick Rd., Amityville, N. Y.
Telecomputing Corp., 133 E. Santa Anita Ave., Burbank, Calif.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Teletronics Laboratory, Inc., Kinkle St., Westbury, N. Y.
Televiso Corp., 1415 Golf Rd., Des Plaines, Ill.
Tel-Instrument Co., 728 Garden St., Carlstadt, N. J.
Telonic Industries, 444 S. Rural St., Indianapolis 1, Ind.
Tenney Engineering, Inc., 1090 Springfield Rd., Union, N. J.
Terado Co., 1068 Raymond Ave., St. Paul 14, Minn.
Texas Instruments, Inc., 6000 Lemmon Ave., Dallas 9, Texas
Ther Electric & Machine Works, 15 S. Jefferson St., Chicago 6, Ill.
Thermistor Corp. of America, Durham Ave., Metuchen, N. J.
Thermo Electric Mfg. Co., 465 Huff, Dubuque, Iowa
Thermo Instrument Co., P. O. Box 336, 1310 Old County Rd., Belmont, Calif.
Thompson Products, Inc., 2196 Clarkwood Ave., Cleveland 3, Ohio
Thor Ceramics, Inc., 225 Belleville Ave., Bloomfield, N. J.
Thordarson-Meissner Mfg. Divs., Mt. Carmel, Ill.
Thwing-Albert Instrument Co., Penn St. & Pulaski Ave., Philadelphia 44, Pa.
Times Facsimile Corp., 540 W. 58th St., New York 19, N. Y.
Tinsley Laboratories, Inc., 2526 Grove St., Berkeley 4, Calif.
Titeflex, Inc., 500 Frelinghuysen Ave., Newark 5, N. J.
Tork Clock Co., Inc., Mount Vernon, N. Y.
Torocoil Co., 1374 Mobile Court, St. Louis, Mo.
Torwico Electronics, Inc., 975 Frelinghuysen Ave., Newark 5, N. J.
Tracerlab, Inc., 130 High St., Boston 10, Mass.
Trad TV Corp., 1000 First Ave., Asbury Park, N. J.
Trane Company, The, La Crosse, Wis.
Transformer Specialty Co., Inc., Bala Cynwyd, Pa.
Transformers, Inc., 532 North St., Endicott, N. Y.
Transicoil Corp., 107 Grand St., New York 13, N. Y.
Transistor Products, Inc., 241–257 Crescent St., Waltham 54, Mass.
Transonic, Inc., 808 Sixteenth St., Box 96A, Bakersfield, Calif.
Trans-Sonics, Inc., Bedford Airport, Bedford, Mass.
Treadwell Co., Midland, Pa.
Tresco, 3824 Terrace St., Philadelphia 28, Pa.
Tri-Point Mfg. & Development Co., 401 Grand St., Brooklyn 11, N. Y.
Triad Transformer Corp., 4055 Redwood Ave., Venice, Calif.
Trimount Instrument Co., 3119 W. Lake St., Chicago 12, Ill.
Trion, Inc., 1000 Island Ave., McKees Rocks, Pa.
Triplett Electrical Instrument Co., 286 Harmon Rd., Bluffton, Ohio.
Trott Electronics Co., 1944 Clinton Ave., N., Rochester 21, N. Y.
Tru-Ohm Products Div., Model Engineering & Mfg., Inc., 2800 Milwaukee Ave., Chicago 18, Ill.
Tung-Sol Electric, Inc., 95 Eighth Ave., Newark 4, N. J.
Twentieth Century Electronics Ltd., Dunbar Works, Dunbar St., West Norwood, London S. E. 27, England

U. M. & F. Mfg. Corp., 10929 Vanowen St., North Hollywood, Calif.
Ulanet Co., George, 413 Market St., Newark 5, N. J.
Ultrasonic Corp., 640 Memorial Drive, Cambridge 39, Mass.
Unimax Div. of The W. L. Maxson Corp., 460 W. 34th St., New York 1, N. Y.
Union Bay State Chemical Co., Inc., 491 Main St., Cambridge 42, Mass.
Union Steam Pump Co., Battle Creek, Mich.
United Pressed Products Co., 741 W. Harrison St., Chicago 7, Ill.
United Chromium, Incorporated, 100 E. 42nd St., New York, N. Y.
United Manufacturing Co., 41 Haig St., Hamden 14, Conn.
United Materials & Richmond Brick Co., Ltd., Pt. Richmond, Calif.
United States Air Conditioning Corp., Como Ave., S. E. at 33rd, Minneapolis 14, Minn.
U. S. Electrical Motors, Inc., 200 E. Slauson Ave., Los Angeles, Calif.
U. S. Electronics Corp., 276 Warren St., Lyndhurst, N. J.
U. S. Gasket Co., Fluorocarbon Products, Inc., Div., 600 N. 10th St., Camden 1, N. J.
U. S. Gauge Div., American Machine and Metals, Inc., Sellersville, Pa.
U. S. Radium Corp., 535 Pearl St., New York 7, N. Y.
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.
United States Steel Corp., 525 William Penn Place, Pittsburgh 30, Pa.
U. S. Stoneware Co., Akron 9, Ohio
United States Testing Co., Hoboken, N. J.
United Transformer Co., 150 Varick St., New York 13, N. Y.
Universal Electronics Co., 2012 S. Sepulveda Blvd., Los Angeles 25, Calif.
Utah Radio Products, Inc., 1123 Franklin Rd., Huntington, Ind.

Vactron, Inc., P. O. Box 641, Ventura, Calif.
Vacuum Electronic Engineering Co., 86 Denton Ave., New Hyde Park, N. Y.
Vacuum Metals Corp., 70 Memorial Drive, Cambridge 42, Mass.
Vacuum Tube Products, 506 S. Cleveland St., Oceanside, Calif.

NUCLEAR AND ALLIED PRODUCTS

Van Dyke Instruments, Inc., P. O. Box 335, St. Petersburg 1, Fla.
Vanton Pump & Equipment Corp., 350 Fifth Ave., New York 1, N. Y.
Varian Associates, 611 Hansen Way, Palo Alto, Calif.
Vari-L Co., Inc., P. O. Box 1433, Stamford, Conn.
Varniton Co., 416 N. Varney St., Burbank, Calif.
Varo Mfg. Co., Inc., 1801 Walnut St., Garland, Texas
Vectron, Inc., 400 Main St., Waltham, Mass.
Veeder-Root, Inc., 20 Sargeant St., Hartford 2, Conn.
Versenes Inc., 875 Waverly St., Framingham, Mass.
Vibration Research Labs., Inc., 97 Lake Ave., Tuckahoe, N. Y.
Vickers Electric Division, Vickers, Inc., 1840 Locust St., St. Louis 3, Mo.
Victoreen Instrument Co., 5800 Hough Ave., Cleveland 3, Ohio
Victory Engineering Corp., Springfield Rd., Union, N. J.
Videon Electric Corp., 902 E. Michigan St., Indianapolis 2, Ind.
Viking Pump Co., Fourth & Stae St., Cedar Falls, Iowa
Vitro Corp. of America, 233 Broadway, New York 7, N. Y.
Volkers & Schaffer Mfg. Corp., P. O. Box 996, Schenectady, N. Y.
Vorac Co., 147 Meadow Rd., Rutherford, N. J.
Vulcan Electric Co., 88 Holten St., Danvers, Mass.

Wakefield Industries, Inc., 5108 Grove St., Skokie, Ill.
Walkirt Co., 145 W. Hazel, Inglewood, Calif.
Wallace & Tiernan Inc., Belleville 9, N. J.
Walland-Pierce Corp., 1928 Pacific Coast Highway, Lomita, Calif.
Wang Laboratories, 37 Hurley St., Cambridge 41, Mass.
Ward Leonard Electric Co., 121 South St., Mt. Vernon, N. Y.
Warner Ventilator Co., La Grange, Ind.
Waterman Products Co., Inc., 2445–63 Emerald St., Philadelphia 25, Pa.
Waters Manufacturing Inc., 4 Gordon St., Waltham 54, Mass.
Watlow Electric Mfg. Co., 1376 Ferguson Ave., St. Louis 14, Mo.
Watson Mfg. Co., Inc., Jamestown, N. Y.
Waveforms, Inc., 333 Sixth Ave., New York 14, N. Y.
Waveline, Inc., Box 470, Caldwell, N. J.
Wayne-Kerr Laboratories, Ltd., New Malden, Surrey, England
Webber Mfg. Co., Inc., 2745 Madison Ave., Indianapolis 3, Ind.
Weksler Thermometer Corp., Martinique Bldg., 49 W. 32nd St., New York 1, N. Y.
Welch Allyn, Inc., Skaneateles Falls, N. Y.
Welch Scientific Co., W. M., 1515 Sedgwick St., Chicago 10, Ill.
Weltronic Co., 19500 W. Eight Mile Rd., Detroit 19, Mich.
West Coast Electronics Co., 5873 W. Jefferson, Los Angeles 16, Calif.
West Instrument Corp., 525 N. Noble St., Chicago 22, Ill.
Westberg Mfg. Co., 144 S. Coombs St., Napa, Calif.
Western Electro-Acoustic Labs., 204 S. Beverly Drive, Beverly Hills, Calif.
Western Engineering & Mfg. Co., 4108 Ocean Park Ave., Venice, Calif.
Western Felt Works, 4029 Ogden Ave., Chicago, Ill.
Western Gold & Platinum Works, 589 Bryant St., San Francisco, Calif.
Western Radiation Lab., 1107 W. 24th St., Los Angeles 7, Calif.
Western Sound & Electric Labs., 805 S. Fifth St., Milwaukee 4, Wis.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.
Westinghouse Electric Corp., Atomic Equipment Dept., Cheswick, Pa.
Westinghouse Electric Corp., Electronic Tube Div., Box 284, Elmira, N. Y.
Weston Electrical Instrument Corp., 614 Frelinghuysen Ave., Newark 5, N. J.
Wheaton Co., T. C. Millville, N. J.
Wheelco Instruments Div., Barber-Colman Co., Rockford, Ill.
Wheeler Insulated Wire Co., Inc., 150 E. Aurora St., Waterbury 91, Conn.
White Dental Mfg. Co., S. S., 10 E. 40th St., New York 16, N. Y.
Whittington Pump & Engineering Corp., 1126 Prospect St., Indianapolis 3, Ind.
Wilkens-Anderson Co., 4525 W. Division St., Chicago 51, Ill.
Williams & Associates, 4905 Del Ray Ave., Bethesda, Md.
Will Corp., Rochester 3, N. Y.
Willson Products, Inc., Reading, Pa.
Wilson & Co., G. C., 1950 Eighth Ave., Huntington, W. Va.
Winchester Electronics, Inc., Willard Road, Norwalk, Conn.
Winslow Co., Inc., 9 Liberty St., Newark, N. J.
Wirt Co., 5221 Greene St., Philadelphia 44, Pa.
Wisconsin Porcelain Co., Sun Prairie, Wis.
Wood Counter Laboratory, N., 5491 Blackstone, Chicago 15, Ill.
Worner Electronic Devices, Rankin, Ill.
Worthington Corp., Harrison, N. J.

X-Ray Dept. of General Electric Co., 4855 Electric Ave., Milwaukee, Wis.

Yardney Electric Corp., 40 Leonard St., New York 13, N. Y.
Yellow Springs Instrument Co., Inc., P. O. Box 106, Yellow Springs, Ohio
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.
York Corp., York, Pa.

Zallea Brothers, 800 Locust St., Wilmington, Del.
Zenith Optical Co., Div. of Polan Industries, Huntington, W. Va.
Zenith Optical Lab., 1940 Great Neck Rd., Copiague, N. Y.
Zierick Mfg. Corp., Beechwood & Rockdale Aves., New Rochelle, N. Y.
Zophar Mills, Inc., 112–130 26th St., Brooklyn 32 N. Y.

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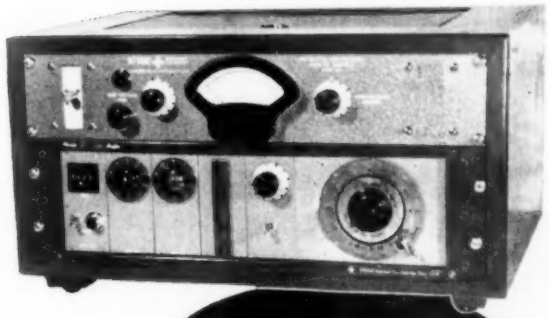

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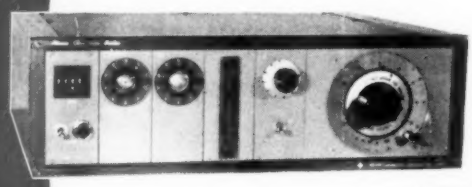

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